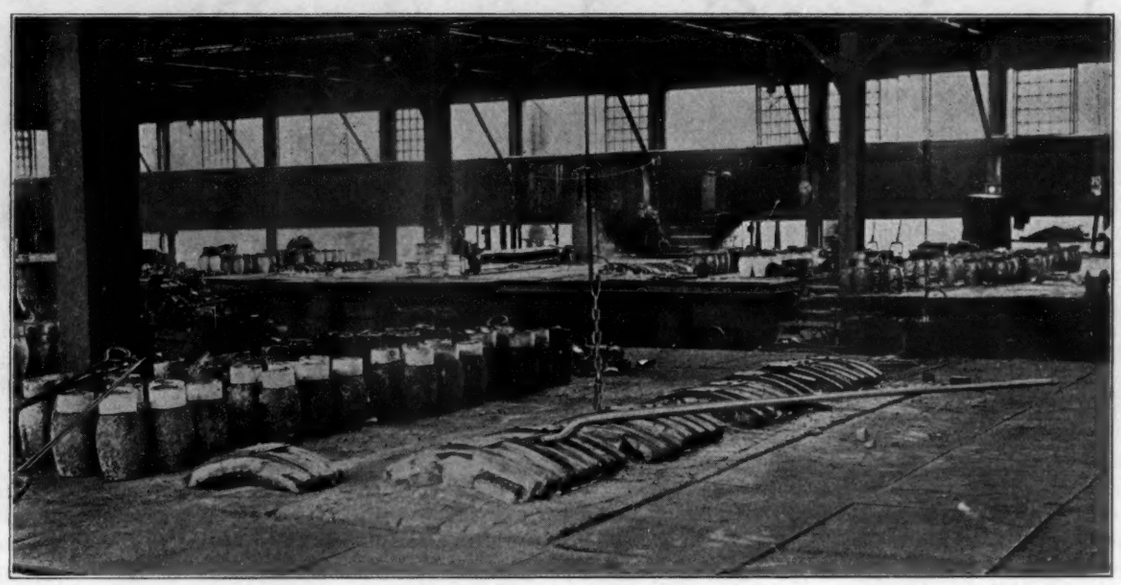


Making High Grade Steel-IV

Production of High Speed Steel Is Beset with Many Difficulties Which with Buying Methods Keep Cost High

By John A. Coyle

REAL accomplishments in the development of the art of making high grade steel in most cases have been of small moment and not of the greatest money saving character. Many misleading theories based on purely empirical foundations are reflected in the unsatisfactory results in producing the finished article. They also contribute to increased costs brought about by excess wastage and difficulties in processing due to heavy drafts and allied influences.

Unquestionably the greatest advance in high grade steel making is found in the development of high speed steel—the golden fleece of the special steel industry. The best evidence of the importance of this mechanical trojan is in its performance in the present day industrial world.

To show the trend in character of tool steels it is sufficient to follow the analysis of pre-Mushet era carbon steel, that of the standard Mushet and its modifications and amplifications, then the analysis of steels in the self-hardening era and finally show the chemistry of high speed steel. The chemical analyses of steels brought out during this range of development are shown in the accompanying table.

It will be noted that molybdenum has been ignored, because of limited knowledge on its behavior in modern high speed steel. Higher percentages of vanadium than are shown in the table have been used. As high as 2.00 per cent was adopted at one time, although it is generally understood today that 1.00 per cent vanadium is standard. No reference is made to cobalt, al-

(*Continued on Page* 268)

Chemical Analyses of Typical Tool Steels

	Vanadium	Tungsten	Chromium	Carbon	Manganese	Silicon	Phosphorus	Sulphur
English carbon steel	.....	5.50	0.50	1.05	0.19	0.20	0.017	0.017
Mushet (average)	.....	5.50	0.50	2.40	1.90	0.70	0.055	0.050
(modified)	.....	4.40	4.00	1.50	0.30	0.25	0.017	0.023
(amplified)	.....	6.00	0.40	2.10	1.80	0.90	0.037	0.023
Self hardening (minimum)	.....	4.40	0.20	1.15	0.20	0.15	0.016	0.007
(maximum)	.....	11.60	4.00	2.30	3.50	1.05	0.072	0.025
Modern high speed steel (minimum)	.....	9.25	2.25	0.30	0.05	0.05	0.010	0.0075
(maximum)	.....	25.50	7.00	1.30	0.30	1.35	0.030	0.015
Standard (low)	0.25	17.75	3.75	0.63	0.10	0.05	0.010	0.0075
(high)	0.35	18.25	4.25	0.68	0.20	0.25	0.020	0.015
(average)	0.30	18.00	4.00	0.65	0.15	0.15	0.015	0.012

Pulverizes Coal at the Furnace

Eastern Malleable Castings Producer Employs Powdered Fuel Prepared Near Point of Consumption—Equipment, Consisting of Handling Apparatus, Dryer and Pulverizer, Is Compact

By E. C. Kreutzberg

WHAT is claimed to be an important feature in reducing production costs in the malleable castings industry takes the form of a new type of coal pulverizer directly connected to the consuming unit and known as a unit pulverizer. Without storage or any other intermediate facilities, it pulverizes coal for immediate consumption in the furnace or oven unit to which it is attached.

Definite figures are not available up to the present, but it is admitted that the use of the unit pulverizer has effected a saving of considerably more than 25 per cent in the total melting costs as compared with the cost of operating a hand-fired furnace. These savings are distributed over practically every item of the melting cost and include cost of coal, firing labor, ash disposal, slag removal, metal charge, kindling the fire, skimming rods, power, fire brick and mason labor. A saving also is effected through a reduction in the furnace loss.

These results are the outgrowth of a sweeping investigation undertaken at the plant of Kuebler Foundries, Inc., Easton, Pa., early in 1925 with a view of obtaining maximum efficiency from its coal consuming units. About that time the Grindle Fuel Equipment Co., a subsidiary of the Whiting Corp., Harvey, Ill., had perfected a unit pulverizer for which it was seeking an initial installation. Arrangements were perfected to try it out at the Kuebler plant under a guarantee that the pulverizer would effect a minimum saving of 25 per cent in the total melting costs of a 20-ton reverberatory furnace built by the Grindle Fuel Equipment Co.

The equipment was completed and placed in operation in September. While exact figures on the actual operating costs have not been given out, adoption of the method by other plants would seem to indicate that the results are up to expectations. One prominent agricultural implement maker has ordered 22 of the new unit pulverizers. A large malleable iron company in the east has ordered a number and several other companies have ordered one each.

In general it may be stated the new apparatus comprises a receiving hopper, a bucket elevator, a vertical waste heat dryer, the pulverizer itself, which supplies air to carry the pulverized coal away from the pulverizer and a secondary exhauster which supplies additional air for combustion.

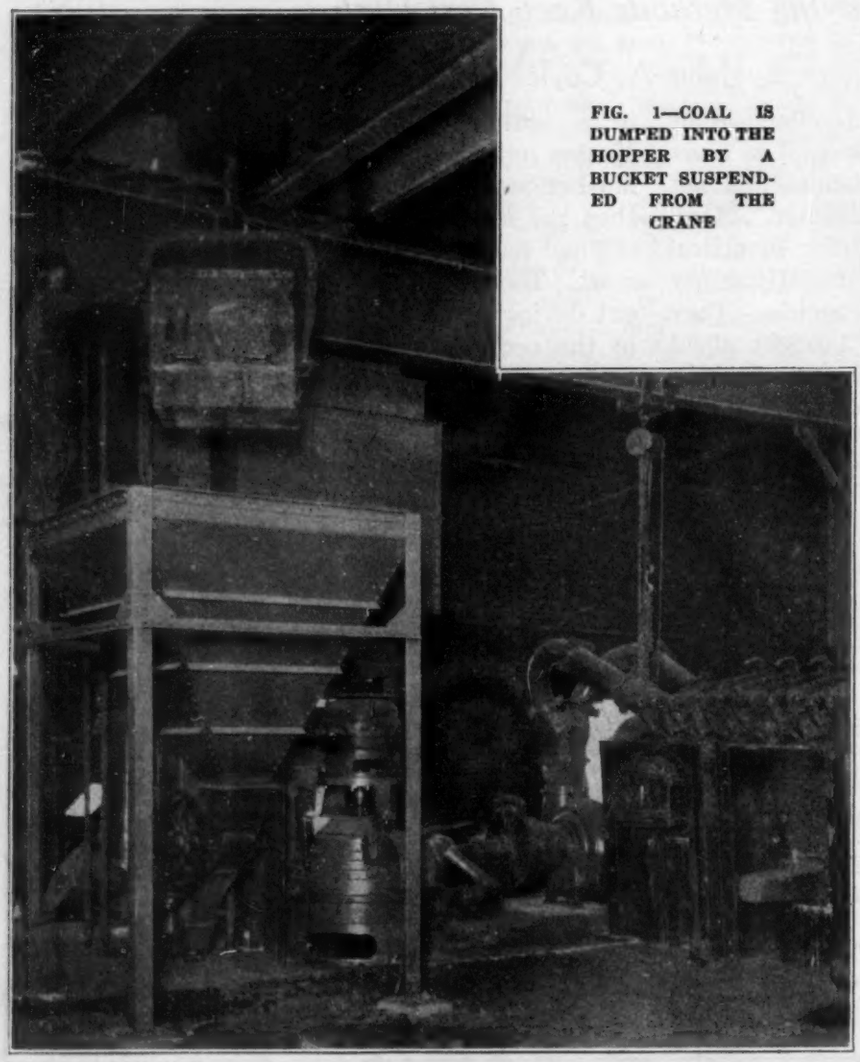


FIG. 1—COAL IS DUMPED INTO THE HOPPER BY A BUCKET SUSPENDED FROM THE CRANE

Method of Operation

Coal in dump buckets is brought to the pulverizer by an overhead traveling crane. It is dumped into the hopper as shown in Fig. 1 and then elevated by the bucket elevator and dumped into the drying chamber. This feature clearly is shown in Fig. 3. Here the coal is dried by the waste heat from the furnace. From the drying chamber the coal passes through a chute and is discharged onto an endless belt. This belt travels over a magnetic pulley which removes small pieces of tramp iron or steel such as frequently are found in the coal. Through another chute the coal then passes to a pulverizer of the vertical shaft type designed in five stages. It is enclosed in a cast iron beehive housing. The interior of the housing is provided with high carbon steel pulverizer rings with corrugated interior surfaces.

The rotor consists of five steel disks with manganese steel beaters centered on a vertical shaft operating through a flexible coupling at a speed of 1800 revolutions per minute. When the coal falls into the pulverizer from the feeder it drops on the rapidly revolving top disk from whence it is thrown out against the pulverizer ring. As it rebounds the beaters strike

FIG. 2—SHOWING THE RELATIVE SIZE, SHAPE AND POSITION OF THE PULVERIZER UNIT IN RELATION TO THE FIRING END OF THE FURNACE

it after which it falls down onto the second disk. This operation continues through the five stages, after which the pulverized coal falls under the rotor. The bottom of the rotor is equipped with fan blades which furnish sufficient air pressure to blow the coal through pipes to the secondary exhauster where additional combustion air is added and then through the burners into the combined combustion and heating chamber of the melting furnace. The amount of air which the exhauster supplies is controlled by a hand lever which accurately regulates the size of the openings in the exhauster fan casing.

Formerly the Kuebler Co. bought lump, low sulphur, gas coal of the highest grade. At present owing to the effects of the anthracite coal strike, this coal is bringing $6 to $8 a gross ton, f.o.b. western Pennsylvania mines. The company now purchases coal of the same grade, but owing to its ability to accept anything that goes through a 1½-inch mesh, it is able to buy coal at $1.95 a gross ton at the mines.

Amount of Ash Is Negligible

An interesting feature of the present operation of the furnace is that the ash is so small as to be negligible. The coal now being used is sold as containing 8.55 per cent ash, but the actual ash accumulation is insignificant.

Another advantage claimed for the present method of firing is that the temperature of the furnace may be raised to the desired degree more quickly than in the hand firing days. Also the heat is controlled more easily. The heats are turned out in less time. Kuebler Foundries, Inc., now contemplates the erection of new annealing ovens to be equipped with a unit pulverizer. The company's plans also call for the equipment of additional melting furnaces.

A recent bulletin, entitled "Gases in Metals," published by the bureau of standards, department of commerce, Washington, deals with the determination of oxygen and hydrogen in metals by fusion in vacuum. The data was prepared by Louis Jordan, chemist, and James R. Eckman, assistant chemist, both of the bureau, who developed a procedure for determining oxygen in metals.

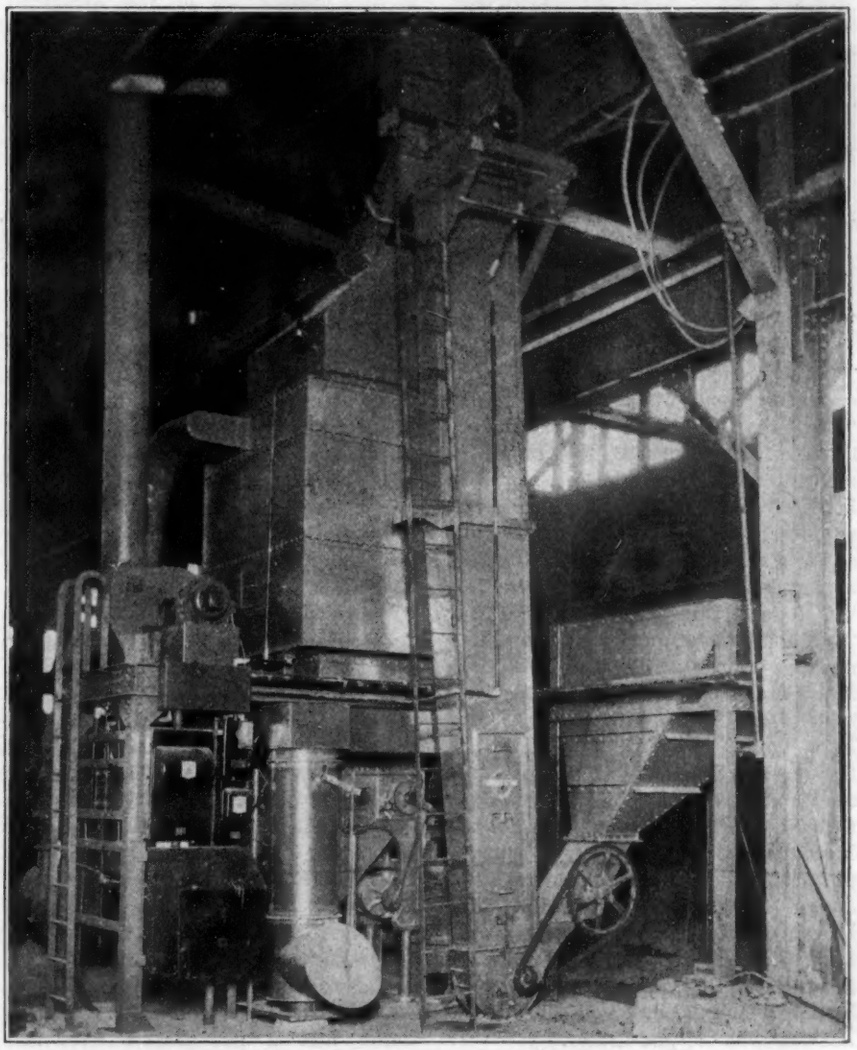


FIG. 3—GENERAL VIEW OF AUXILIARY EQUIPMENT SHOWING HOPPER, DRYING CHAMBER AND ELEVATOR

"Be Fair" Wins Gary Place in History

By J. F. Froggett

Review of "Life of Judge Gary", by Ida M. Tarbell

INTERTWINED so closely are the lives of the United States Steel Corp. and of its first and present executive head, Judge Elbert Henry Gary, that it seems impossible to think of one without the mind instantly calling up the other. The Steel corporation as it exists today is as clearly the child of Judge Gary as if it were his own flesh and blood, in popular belief. And Miss Ida Tarbell follows this popular view in her "Life of Judge Gary" which has been running serially through *McClure's Magazine* and now is published in book form by D. Appleton & Co., New York. Pursuing Miss Tarbell's theory, the Steel corporation is more nearly the creation of Judge Gary than that of J. Pierpont Morgan Sr. Morgan put together its primary physical and financial elements. But Judge Gary breathed into it the breath of life, led it out of its swaddling clothes and guided it into the attainment of the full stature of corporate manhood. And Charles M. Schwab was its god-father.

Although the Steel corporation will have attained its first quarter century of actual corporate life next April, already legends are beginning to gather around it. One such is that its inception came about through a speech delivered by Mr. Schwab at a banquet tendered him in December, 1900, by two New York friends. Only one speech was made on this occasion and that one by Mr. Schwab. He had as his audience principally, for all practical purposes, Mr. Morgan. Schwab in painting a picture of the possibilities of the American steel industry of the future, made such a powerful impress upon the vision of the elder Morgan as finally compelled that connoisseur of art to gather it in and hang it on his private line.

The Corporation's Background

Reading the Tarbell "Life," one is forced to the conclusion that the popular Schwab version is a painting of only part of the foreground; the background is supplied by the earlier formed "trust," the Federal Steel Co., absorber of the Illinois Steel Co., the Federal being undoubtedly the work in 1898 of Judge Gary, then a Chicago corporation lawyer of 20 years standing. In it he followed the identical lines of corporation welding he had pursued six years earlier in gathering under one corporation umbrella the scattered wire makers of the Middle West under the name of the Consolidated Steel & Wire Co. This he did at the instance of John W. Gates, a hustling young wire salesman and "patent pirate," born within 20 miles of Wheaton, Ill., where Gary was born Oct. 8, 1846, son of Erastus and Susan A. Gary, pioneers of northern Illinois. Strangely enough, however, you will search in vain in the Tarbell "Life" for that date; the nearest she gets to it is on page 19 where she says that in 1849, when Erastus Gary was ready to move out of a log house into a new frame one near Wheaton, the younger Gary son was "two and a half" years old. Must certainly have been an oversight by Miss Tarbell for it is the only biography of Judge Gary of the dozens we have seen which does not specifically mention the date of his birth. Judge Gary came of as sound, robust New England stock as ever migrated and grew up with the West, as carefully and very readibly is narrated in the first chapter.

Let's get back to Gates. Much of the colorful history of the modern American steel industry does finally get back to Gates. This restless dynamic young man, not content with forcing his way into the directorate and presidency of the Illinois Steel Co. in 1894 through his ability to buy steel rods to advantage for his Consolidated company, in 1898 had formed the American Steel & Wire Co. around the Consolidated nucleus when the Spanish war's outbreak had dealt a blow to J. P. Morgan's effort to pull it together at Gary's suggestion. Then, as Daniel G. Reid afterward testified before a congressional investigating committee, came "like that," with a snap of his fingers, the formation through the Moore brothers, William H. and James H. of Chicago, a whole flood of little "trusts" including the National Tube Co., the American Steel Hoop Co., the American Sheet Steel Co., the National Steel Co. and the American Bridge Co.

Meanwhile under the presidency of Gates, the Illinois Steel Co. had led a vicarious existence, much of its vicariousness being supplied by its arch-competitor, the Pittsburgh ironmaster Andrew Carnegie. Competition for the steel rail business of the growing West between these two became fierce, the most destructive competition ever witnessed in the trade's history. Between them they drove down the price of steel rails to $17 a ton and even less is reported, whereas bessemer pig iron brought only $10, valley, and southern pig iron was being delivered at $9 to $10 at Mahoning valley mills. It was a rough and tumble combat,

including gouging and hair-pulling, with no holds barred. Both adversaries found themselves groggy, right in the bitter "panic" days succeeding the first McKinley presidential election in 1896.

Gary had little trouble then persuading the weary stockholders of Illinois Steel, of the Minnesota Iron Co. which sold iron ore to the Illinois company, some owners of Connellsville coal lands and so on to get together in the Federal Steel Co. And Gary with his previous training in dickering with stockholders of various small plants, was the very man to put the combination together. In this he had the co-operation of J. P. Morgan who furnished the very necessary funds and who insisted that Gary become the president of the new Federal Steel Co., naming his own directors, even his own salary.

This, then, Miss Tarbell insists, was the prelude to the historic Schwab speech. Now, until the *McClure Magazine* publication, Mr. Schwab had always been a regular attendant at the spring and autumn meetings of the American Iron & Steel institute, always being called on for a speech which never failed to bring an outburst of enthusiasm from the thousand steel men in attendance at the banquet. He has not attended one since. It may be that readers will never gain an insight into Mr. Schwab's side of the story until someone writes his biography, which, by the way, would make very interesting reading. Such a powerful, robust, sturdy center of many things intimately connected with modern American industry as Mr. Schwab always has been, cannot escape that biography—although he may, so long as he lives. A biographer of a living person takes upon himself, or herself as the case may be, what the gamblers term a "chance," a chance that others may rise up and dispute what clearly appears in one book to be the facts. But that is fate. One cannot escape this Schwab matter all through the book. In fact, the index cites 13 references to Schwab or only 4 fewer than it does to J. P. Morgan, 3 more than it makes to Gates, and 2 more than it does to the "Gary policies."

Insisting from the first sketch of his early days as a youthful lawyer, Miss Tarbell makes clear to the reader the animating principle of Judge Gary always has been, and is, to be "fair." This code he laid down for himself as a youth, then as lawyer, then as judge for eight years of DuPage county, Ill., finally as steelmaster. Upon this code is based the socalled Gary policies, which the public first heard of in 1908 when the famous "Gary dinners" first brought the American steel trade out of the 1907 "panic" slough. But they had been brought into evidence early in the life of the Steel corporation, sharp cleavage being cut by it between the oldtime Carnegie policies of ruthlessness in competition and the new modern policy of "co-operation" and "conciliation" as between steelworks competitors. This Gary code ever since has been the cause of endless debates between the New York and the Pittsburgh schools of thought within the Steel corporation's ranks, although of late years the New York school has dominated without question. The Gary dictum is summed up in two words: "Be fair." Now the steel industry finally has succeeded in grasping that Judge Gary actually tries to live up to his own dictum.

But it did not always think so, not that it disbelieved the judge, but that it thought he would tire of it. Twice he was on the point of resigning as chairman because his directors wanted to pull one way and he as chairman had the opposite direction in mind. Morgan Sr., however, agreed to go Gary's way. So Mr. Schwab at one time, and Mr. Corey at another, went their way; the chairmanship became even more the dominant feature of Steel corporation management.

This becomes borne in upon one as he reads of the disagreements between the directors in the early days. Percival Roberts Jr., himself a real sailor in those days of squalls, denominated the board a body of "cats and dogs" and resigned because of the squabbles. But Gary stuck it out, finally bringing the board to his side. Probably the first big difference came about three months after the Steel corporation came into being when T. J. Shaffer, president of the Amalgamated Association of Iron, Tin & Steel Workers, precipitated a strike in July over whether the tin mills of the American Sheet & Tin Plate subsidiary should be unionized. Morgan, Schwab, Gary and all the Steel corporation sponsors got into the struggle, with Homestead of 1892 in mind. But the mills were not unionized, finally the Carnegie Steel Co. discarding the Amalgamated in its last foothold at Youngstown, O., several years later. And that ended unions in the Steel corporation.

Urged by Gary and backed by George W. Perkins, the directors then inaugurated the plan, since working out so well, of taking in the workmen as stockholders. Miss Tarbell lays bare all the details of this plan in a wonderfully clear manner. In an equal fashion she treats the welfare work of the corporation.

Miss Tarbell's "Life" is well worth reading because it contains interesting philosophical digressions involving Judge Gary's connection with many important steel world activities. The vast improvement in corporate sense of responsibility, in labor conditions in mill and mine, in relationships between competitors, how Judge Gary awaited with considerable confidence mixed with anxiety the outcome of the "dissolution suit" brought by the federal government unsuccessfully, the remarkable earning capacity of the vast organization—all these things are set forth clearly, convincingly and with a certain pleasing flourish that Miss Tarbell never fails to add in all her writings. She might, for instance, have spoken of him as Philander C. Knox, instead of merely Philander Knox; or called him Capt. William R. Jones, or just plain "Bill" as he was known to the steel mill crowd, and not the diminutive Capt. "Billy", because he was a big man, mentally as well as physically; and she might have named both the Moore brothers, since these Chicago "trust builders" were as the Siamese twins, and might have given their initials W. H. and J. H.; and a few other things like these which an intelligent copy-reader would have supplied. Because this book is destined to take a permanent place on library shelves, it ought to be gone over carefully for its second edition, which is sure to come, and these rough spots be rubbed out.

But these are mere matters of incidental detail. The main purpose of the work has been carried out with great clarity, the delineation of the character and purpose of Judge Gary. He lives in this book, a really manful, sturdy, two-fisted (as he proved on more than one occasion, once in court) man with a code of ethics to which he has been devoted throughout his eventful life.

Book Reviews

Coal as Oil Source

Conversion of Coal into Oils, by Dr. Frantz Fischer; authorized English translation by R. Lessing; cloth, 284 pages, 7¼ x 9½ inches; published by Ernest Benn Ltd., London and supplied by IRON TRADE REVIEW for $8 and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 40 shillings net.

Production of oil from coal in countries possessing the latter and devoid of the former is a means of supplying the lack. This came to be an important factor in industrial life during the World war and has been almost as important in the years since, in view of the increasing demand for

oils and other derivatives of coal for commercial service on land, sea and air. Aiming at means to accomplish the complete liquefaction of coal a research organization was formed in Germany on the eve of the outbreak of the war. Investigations were made under direction of Dr. Fischer and results were published in six volumes, which being in German, were not readily available in English-speaking countries. Dr. Fischer's review of the accomplishments of this board of investigation is comprehended in this volume, which covers the entire range of research during the past ten years.

The translator has endeavored to preserve the personal note and the original text has been followed as closely as possible. Notes dealing with latest developments of certain phases have been appended to round out the work.

The volume is profusely illustrated and is thoroughly indexed. It presents to the investigator in this field an authoritative survey of the accomplishments of the research by this group of scientists which cannot fail being of great value.

Cast Iron Pipe Making Improved

By Frank Grossmann

THE first cast iron pipe on record still is in service after more than 250 years. This early pipe was cast horizontally and in short lengths. In spite of the fact that these pipes were only three or four feet long, much trouble was experienced with floating cores. This resulted in defective pipe with thin walls on one side which often failed after a few years of service. With the relatively long horizontal area to be supplied with molten iron, it is not surprising that much of this early pipe showed soft spots and sand holes.

These troubles were eliminated with the introduction of the vertical method of casting pipe, almost three-quarters of a century ago, this improvement in manufacturing methods being followed almost immediately by the development of longer lengths of pipe. Cast iron pipe now is supplied in standard 12-foot lengths, although in the smaller sizes it is available in 16-foot or 5-meter (16 feet—4⅞ inches) lengths.

The pipes are cast in round iron flasks considerably larger than the pipes. Metal patterns are lowered into these flasks and the space between the flask and the pattern is filled with especially prepared sand. After this sand is packed tightly in place, the patterns are withdrawn leaving an impression of the shape of the outside of the pipe in the sand. This is known as the mold and after it has been coated with blacking to give a smooth surface to the iron, it is dried by placing on an oven over night.

At the same time, the core for forming the interior of the pipe is made. The metal bar on which the core is built up first is wound with a combustible rope of hay. Later as the pipe is poured, this rope burns, permitting the bar to be withdrawn. Outside the hay successive layers of loam are placed which build up the bar until it is the required size to form the inside of the pipe. The caulking space on the inside of the bell is formed by the separate core which fits over the main core. Both of these are coated with blacking before drying.

The cores are lowered in place in the center of the mold and the space between the mold itself and the core is filled with molten iron, forming the pipe. When the iron has set, the flask is opened and the pipe is taken to the cleaning shed. After the pipe has been cleaned carefully, it is heated again and dipped in the tar and oil coating.

Cast Pipe With Bell Down

The only real improvement in this method of manufacturing pipe has been the recent introduction of pipe, cast with the bell down. Prior to the introduction of this method, the bells were formed at the upper end of the flask. This occasionally resulted in impurities being entrapped in the bell itself. By placing the bell at the lower end of the mold, it is possible to cast a large riser on the spigot end which may be machined off eliminating any possibility of impurities remaining in the pipe.

Some three years ago the introduction of centrifugally-cast cast iron pipe, made by the de Lavaud process, it is said, resulted in better pipe at a less cost. It is customary to speak of the centrifugal method of casting pipe as a new development. Actually this is not the case, as the first patents governing the casting of metals by centrifugal force were taken out over 100 years ago in 1809. Early foundrymen were handicapped by their efforts to use sand molds in the centrifugal machines. These molds were not strong enough to withstand the force of the molten iron when they were rotated. It was not until permanent molds were perfected by D. S. de Lavaud that real progress was made.

The de Lavaud machine for casting pipe by centrifugal force consists of four essential parts, the mold, the mold casing, the spout and the pouring basin. The permanent steel mold, just the shape of the outside of the pipe, is rotated in a slightly inclined position. This mold is enclosed in a casing and the cooling water passes between the mold and the casing. In addition to the rotation of the mold, the mold and casing have a horizontal travel equal to the length of a pipe so that at the start of pouring the mold may be advanced to completely cover the cantilever spout which carries the iron. This spout is supplied with iron at a uniform rate of speed from the pouring basin at the upper end of the machine. Iron is introduced into the rotating mold and is thrown by centrifugal force to the inner surface. At the same time the mold retreats so that the pipe is built up throughout its length.

The cool mold causes the metal to set almost immediately and after a few seconds the pipe may be withdrawn. Still retaining a great deal of the heat of the molten iron, the pipe is carried to an annealing furnace where any possible chill or casting strain is removed.

The uniformity in section of pipe made by this method together with the increased tensile strength permits a reduction in thickness and results in a larger bore for the pipe, it is said. With the smooth interior found on this material, the carrying capacity is increased greatly. The light weight of the pipe results in ease of handling in the field, and the adoption of a bell and spigot joint similar to that used by the metropolitan water district, London, which is practically selfcentering, permits a further reduction of installation costs.

Perhaps the most recent development in the art of jointing cast iron pipe is the use of plain end pipe with bronze welded joints. In this type of installation, a collar of tobin bronze is built up with an oxyacetylene torch

From a paper presented at the recent Milwaukee convention of the National Purchasing Agents association. The author is connected with the U. S. Cast Iron Pipe & Foundry Co., Birmingham, Ala.

over the ends of two plain end pipe which have been butted together. As the tensile strength of the bronze is 50,000 pounds per square inch, a joint of this kind is practically as strong as the pipe itself. A recent installation of 20,000 feet of 6-inch pipe with this type of joint shows that it is easy and economical to lay and that it forms a tight line under pressure.

It is interesting to note that although the method of manufacture and the type of joint for cast iron pipe has been improved, the metal remains typically cast iron.

Gary Did Wrong; Now Repents—Schwab Cheerfully, Brutally Frank—Ford, a Samaritan, Called "Liar"—

Three Good Stories About Three Famous Men, as Narrated by Charles Piez, Chairman, Link-Belt Co., in Recent Speech in St. Louis

JUDGE Gary stands out more prominently than his company—whenever the Steel corporation is mentioned, it is Judge Gary. He is the only man connected with the institution who is mentioned. He is in fact the Steel corporation.

I had a peculiar experience with him several years ago which illustrates the character of the man. Many years ago, in our very early days, we didn't know much about conveying, and we had a large contract for a foundry system for the Deering Harvester Co. Our equipment didn't work satisfactorily but we felt we hadn't been given a fair chance. It was thrown out before we could correct the trouble and we were sued for the money that had been paid on account. Our lawyer was the best we could afford. The Harvester company was at that time represented by Judge Gary, and we both went to court. He took our poor little lawyer by the nape of the neck, shook him hard, and dropped him. That was the end of the case—we lost.

One time I was seated close Judge Gary at a dinner. He turned to me and said:

"Mr. Piez, I had a lawsuit against your company many years ago—"

I had a sort of sinking feeling. To myself I said: "Is the Judge going to gloat over that 30-year old victory?" And I had just about put myself in a defensive attitude when he continued:

"You know", he said, "I think I made a mistake at that time. You fellows had a good idea—what you needed was co-operation. What I should have advised my clients to do was to co-operate instead of fighting."

"That comes from your business experience", I remarked. "You never would have acted on that kind of a suggestion as a lawyer."

"Well", he answered, "we do get wiser as we get older."

* * *

CHARLES SCHWAB is a contrasting type. . . . He is as different from Judge Gary as day from night.

I like to tell the story of my first intimate meeting with Mr. Schwab, because it is typical of his methods. It was at the time when Ed Hurley, chairman of the shipping board and president of the Emergency Fleet corporation, realized that we had lost public confidence—when the public expected us to deliver six million tons of ships and construct the yards to build them in overnight. So when the Germans made their great drive and we were confronted with an increase in our program, Mr. Hurley looked about for some outstanding figure who could help us regain, if possible, the confidence of the people and of the press.

We had an all-day session with Mr. Schwab. We told what we wanted, but he hesitated. He realized that he might be able to help, but he had vast contracts with the government, and likewise realized that to associate himself with the shipping board might lay him open to the charge of using his office to his own advantage. He said he would have to think matters over, and he returned to New York for a few days. When he came back he dropped into my office and sat down.

"I have had talks with friends in New York who know you", he said, "and I have decided to come on, if you stay."

"Mr. Schwab", I answered, "I don't know whether I can do that—I haven't worked under a boss for many years; I'm getting old, and I don't know whether we can pull together."

"Hell", he exclaimed, "I'm taking the same chance on you."

* * *

HENRY FORD is the direct antithesis to both Judge Gary and Charles Schwab. He is a slight, modest man, who isn't at all impressive to the eye.

Mr. Ford has humor. During the war, he was building subchasers. Mr. Schwab and I happened to be in Detroit, and I asked him if he was ever bothered by the stories which went the rounds about Ford machines.

"Not at all", answered Mr. Ford. "They are all good advertising."

Then he told a real Ford story which happened to himself. It seemed that he was experimenting with a worm drive on an old Ford. In testing it out he was driving out into the country some 15 or 20 miles, when he came to a large car that was stalled at the side of the road. Two men were working and fussing with it. Henry stopped and said:

"I would like to be of some help, if you will let me."

At the end of about 15 minutes he succeeded in getting the machine going, and one of the men dove down into his pocket and pulled out a dollar.

"No thanks", Henry protested, "I have plenty of money."

"You're a liar", the man protested. "No man with plenty of money would drive a machine like that!"

* * *

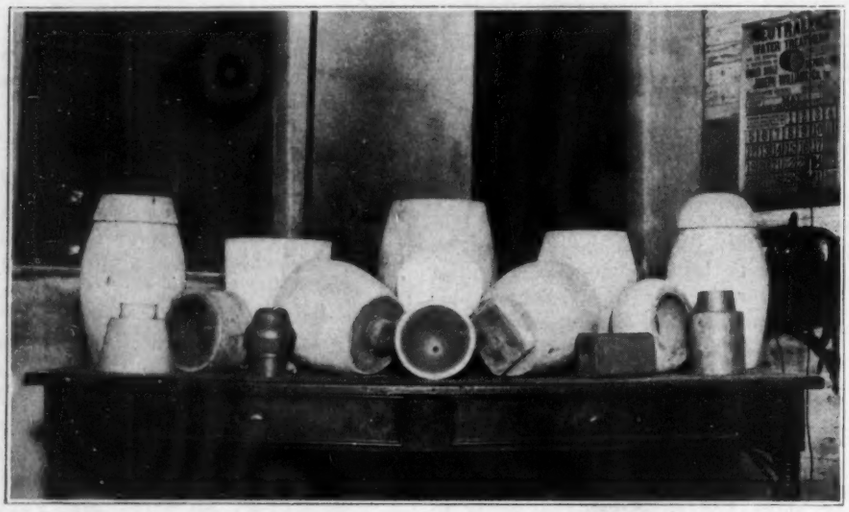
JUDGE GARY, Charles Schwab and Henry Ford all have these qualities necessary to success— vision, courage, resourcefulness, and knowledge of men.

Making High Speed Steel Involves Difficulties

(*Concluded from Page* 261)

though at present a steel containing as high as 4.00 per cent of this element is being made. Uranium when controllable in content will add to the art of high speed steel making, but at present the metal mixer is not sure what he is going to obtain in analysis for a given addition. Many other valuable alloys have been tried but none of them have been present in enough steel to cause a further revolution in the manufacture of steels for speedy cutting and to withstand abuse.

Manufacturers of high speed steel are embarrassed by the whims of purchasers on advice of their metallurgists—not meaning to reflect on the metallurgical profession—because there is too much individualized opinion. A more general recognition of standards in trading in high speed steel would be of unquestionable advantage to all concerned.



Crucibles Used in Making of Fine Steels

It is a fact that if one were to select any of five brands of high speed steel, there would not be enough variation in cutting speed and feed to prompt a change in the source of supply. The writer strongly supports this belief, knowing the general mill practice of the present day as contrasted with the practice in former days. As this time goes on, however, this statement will be subject to qualifications. A few can be anticipated.

The best high speed steel should be made from a charge of 50 to 60 per cent iron (preferably charcoal puddled Swedish—acceptably coal puddled American improved) 27 to 17 per cent identifiable high speed steel or other scrap and 23 per cent of the best alloy additions procurable (if the maximum iron charge of 60 per cent is used). In this connection the calorific power of the furnace must produce a higher temperature than ordinary crucible practice demands.

Remelts of nearly all scrap are periodically acceptable, subject to early refreshment by use of iron. This acceptability is based on the danger of uneconomic piling up of an excess of high speed steel scrap.

Superior results in making high speed steel can be attained only by conserving the solidification temperature of the ingot to avoid cooling or chilling strains, cracks or ruptures, and thereafter bringing the ingot to a temperature giving a soft, plastic metal, with no "bone" in it, for cogging or billeting under the hammer. Otherwise, internal strain or rupture will occur, promoting heavy discard of scrap, or causing a loss on account of the work put on it before the defect is found. Overhammering is destructive. Many still cling to the old idea of grain refinement by dense or semi-cold hammering. High speed steel is fine and tenacious of grain; to attempt to refine it is purely distortion in the direction of failure rather than improvement. For the same reason the ingot must not be over-processed.

Suppose that all users of high speed steel accept a given standard and the ingot is billeted as described. The user becomes culpable for defects if he orders in small quantities because rather than change sizes or guides, the steelmaker must protect himself by use of the finishing hammer. Herein, the section being so small, the reduction from the billet to the bar is not as measureable or controllable as the reduction from the ingot to the billet. In this practice, if the user gets all prime quality in his bars, it probably is at the expense of scrap or output. In any event, it embarrasses the steelmaker.

The best processor of high speed steel in the writer's knowledge was a master-roller who, in charge of all high speed production in a certain mill, took a firm stand in his refusal to hammer-finish high speed steel. The customer waited for the rolling, but the manufacturer's wastage and the probability of the steel causing a users' hazard were merely normal.

The user is culpable in the variation and number of sizes in his stock of high speed steel bars. He is unfair to himself; stock racks filled with costly high speed steel bars frequently deteriorate by disuse or discontinuance of practice into cheap scrap. Why not emulate several of the more conserving large companies by reducing the number of sizes used after a careful study of the problem? One well known company cut handling charges, gained space and reduced expense by eliminating all but two of the 42 sizes of high speed steel used. Think of the saving! It amounted to $15,000 annually.

In finishing of bars on the mill or under the hammer, inspection for seams or other defects is made prior to the annealing operation, which must be carefully performed. The elements of heating time and temperature must be safeguarded, and, on their completion the cooling operation must be under control in order that the steel be workable on its arrival at user's factory. Much otherwise perfect high speed steel has been spoiled by carelessness of the anneal. This should not be so in these days of hardness testing machines supplementing accurate heat control recorders. Every bar or piece should be tested and its hardness number stencilled on the bar alongside the stencilled brand. Again, following the anneal, bars are inspected, and worthless sections, containing physical defects are cut out.

Responsibility of User

After all this careful work and supervision has been exercised by the manufacturer, the customer should try to take good care of the steel in his processes. Let it not be overlooked that the user has positive control, while the maker has only bulk control. But if the user's metallurgist, heat-treater or hardener is careless or incompetent the steel may be spoiled because of an insufficient time element, failure to "sweat" the steel properly for hardening, failure to immerse it in the bath with sufficient

rapidity or to get the heated tool in the air blast quick enough. It must be remembered that a maximum of temperature, presupposing "sweating" maximum hardening, medium penetrability, and speed, bring out the designedly good qualities of well made high speed steel. The brilliant, luminous glaze thrown upon the steel's surface in the heating operation and considered satisfactory, cannot be too strongly condemned.

Production Presents Difficulties

Failure of the user to get the best out of high speed steel causes an economic waste. Think of what care and expense is entailed in its manufacture, including the costly mixture, expensive fluid metal containers, exacting melting operation, costly and hazardous billeting process, the danger from destructive practice in finishing small orders under a hammer, the nerve trying annealing, cooling and inspection, a fight against improper temperature, sand blasting or grinding of the steel. All of this is done to produce a steel to meet the output demand from high-powered machine tools. Consider all of the money it takes to carry this on, with a piling up of value because the user expects that the maker carry his stock. And to what end? A rising cost to the user! He must pay, whether it be in running expense or in having to use a steel made as economically as possible in order that the maker may not lose; a safeguard legitimized commercially.

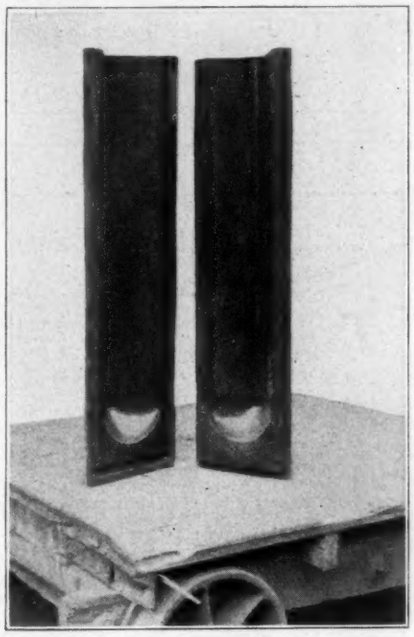
An examination into whether a maker profits sufficiently, particularly in the matter of small orders, will disclose the following:

Cost of mixture, Iron 60 per cent Scrap 17 per cent	$ 62.70
Alloys 23 per cent	494.40
Cost of melting in crucibles	57.97
Cost of ingot, per net ton	$615.07

In carrying this cost further, let it be remembered that we are dealing with a base size, or as those in the steel business know it, a "big mill size." In making this size, we pursue what is known as two-operation practice. Additional cost data are as follows:

Cost of ingots or billets, net ton	$ 615.07
Credit for scrap	100.28
	$ 514.79
Wages	10.00
Expense	14.29
Total, including allowance for loss in manufacture	$ 759.27
Grinding	20.00
Cost of ingots, billets or cogged billets	$ 779.27
Credit for scrap	19.50
	$ 759.77
Wages	16.00
Expense	32.00
Total, including allowance for loss in manufacture	$ 863.92
Cost of ingots, billets cogged or re-cogged billets	863.92
Credit scrap	66.85
Wages	3.60
Expenses	5.40
Total, including allowance for loss in manufacture	$ 915.99
Selling expense	120.00
Expert and administration	48.00
Total cost, net ton	$1083.99

The foregoing cost sheet is for a 0.30 per cent vanadium steel, whereas much 1.00 per cent vanadium steel is made today. Also, one pot will throw more carbon than another under conditions beyond the makers control, so there is a range of "off" carbon ingots which are merely considered as scrap and are remelted. No account is taken in these figures of the two facts mentioned. The cost in question is an estimated ideal; the slightest mischance will cause the wastage to increase.



A Mold in Which Crucible Steel Is Poured Into Ingot Form

The sales effort put forth in marketing high speed steel because of the resistance one maker puts forth against another, is more than extensive. The advantages of an association of high speed steel producers cannot be imagined until discussed by those affected by it. If formed, such an association could control manufacture by adopting a standard mixture and a standard melting method, fixing on standardized time and temperature control, agreeing on standardized reduction drafts, prescribing carefully formulated annealing practice, and adopting standard methods of inspection.

In any event, the user can cut down tool processing costs by decreasing racked sizes and beyond that, by carefully considering all angles of high speed steel and its use, can bring about for himself a saving which will more than compensate for his effort.

Texas May Arrange for Developing Ore Field

The board of managers of the Texas iron industries has found that the state-owned iron ore fields, situated near Rusk, embrace about 400 acres instead of 4000 acres as was supposed by the legislature. While the total area of iron ore land is about 4000 acres, most of it has been donated to other purposes. The state forestry department was given 2000 acres by the legislature and 1600 acres were deeded to the East Texas state hospital. It is regarded as possible by W. A. Black, chairman of the board of managers of the state iron industries, that arrangements may be made for developing the iron ore on the land which is now out of their control. If this is done, the state-owned furnace at Rusk may again be placed in operation, it is stated.

Hot Mills Planned for River Rouge Works

Six rolling mills will be included in the Ford Motor Co.'s steelmaking plant at the River Rouge division according to recently announced plans. In addition to the 14-inch merchant bar mill, which was described in the Dec. 10 issue of IRON TRADE REVIEW, the plant also will include a 42-inch mill, a 32-inch mill, an 18-inch continuous billet mill, an 18-inch continuous sheet bar mill and a 10-inch combination mill for rolling steel and copper.

The steel mill structure extends parallel to the River Rouge slip for more than a quarter of a mile. It is 460 feet wide. In addition to the six mills recently named, the building will house billet storage department, a roll shop, a chipping department and a warehouse. The announcement of an 18-inch continuous sheet bar mill to be installed eventually as part of the equipment of the plant is the nearest suggestion yet made officially that the Ford company intends to add sheet mills. Upon completion of the sheet bar mill the supposition is that contracts for 40 sheet mills to be completed within six months will be awarded. Open-hearth capacity, which now includes four furnaces, undoubtedly will be increased, the present ground provision allowing for an installation of 40 or more stationary furnaces.

New Laboratories Represent Co-operation in Metallurgy

NEW metallurgical laboratories of the Pittsburgh experiment station of the bureau of mines, department of commerce, were formally opened on the evening of Jan. 26. The laboratories are the outgrowth of an agreement made in 1923 under which Carnegie Institute of Technology appointed an advisory board for its department of metallurgy, arranging for co-operative research fellowships in metallurgy at the Pittsburgh experiment station of the bureau of mines. Under the arrangement, certain problems in the metallurgy of iron and steel formerly conducted at the northwest experiment station of the bureau of mines, Seattle, Wash., are being studied at Pittsburgh. In the study of these problems, the well equipped laboratories of Carnegie Institute of Technology are available.

Among the technical problems that are being studied by the newly established metallurgical section are the melting of sponge iron; reduction and carburization in iron smelting; mill ball compositions and preparations; abnormality in case carburized steels; nonmetallic inclusions of steel; and requirements for open-hearth refractories.

The large technical staff of the bureau of mines will be assisted by members of the faculty of Carnegie institute and by the members of the metallurgical advisory board, which is composed of prominent metallurgists connected with the industrial organizations of the greater Pittsburgh district. Some of the investigations will be conducted largely in operating plants in and near Pittsburgh. Other agencies in close proximity that will help facilitate the work are the University of Pittsburgh ,the Mellon institute, and the Carnegie library.

The equipment of the new metallurgical laboratories includes a modern electric furnace laboratory, a metallographic laboratory, and a chemical laboratory.

The metallurgical section of the Pittsburgh station is under the general supervision of D. A. Lyon, assistant director and chief metallurgist of the bureau of mines, and S. P. Kinney, the supervising ferrous metallurgist. The work of the metallurgical section is directly in charge of the section chief, C. E. Sims, who is also the electrometallurgist of the bureau, and who handles all work pertaining to electrometallurgy. F. W. Schroeder, chemist, will handle the work of the section having to do with refractories. B. M. Larsen, chemical engineer, will conduct research problems in metallurgy, and A. K. Hutton has charge of analytical work.

The metallurgical section is aided and supplemented by fellowships supported by Carnegie institute and by local industries. Four fellows this year will study temperature and heat flow in open hearths; case carburized steel, and open-hearth refractories.

The Pittsburgh section will handle all electrometallurgical problems of the metallurgical division of the bureau except some relating to the electrothermic and the electrolytic treatment of zinc ores. To Pittsburgh, also will be consigned all those problems that involve the physico-chemical reactions of steel and iron making.

Link Industries with Research Work

THE metallurgical advisory board which will assist in the work of the new laboratories is composed of the following:

T. D. Lynch, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, chairman.
F. N. Speller, chief metallurgical engineer, National Tube Co., Pittsburgh.
Dr. James Aston, director of research, A. M. Byers Co., Pittsburgh.
F. B. Bell, president, Edgewater Steel Co., Oakmont.
Earl Blough, technical director, Aluminum Co. of America, Pittsburgh.
V. B. Brown, general superintendent, Allegheny Steel Co., Pittsburgh.
Roy H. Davis, manager, Park Works, Crucible Steel Co. of America, Pittsburgh.
A. N. Diehl, vice president, Carnegie Steel Co., Pittsburgh.
George H. Faunce, president, Pennsylvania Smelting Co., Pittsburgh.
A. C. Fieldner, chief chemist, bureau of mines, and superintendent of Pittsburgh experiment station.
James Graves, vice president, Duquesne Light Co., Pittsburgh.
S. A. Grayson, president, Jessop Steel Co., Washington, Pa.
J. O. Handy, director of special investigations, Pittsburgh Testing Laboratory, Pittsburgh.
O. H. J. Hartsuff, general superintendent, Edgar Thomson Steel Works, Braddock.
C. W. Heppenstall, president, Heppenstall Forge & Knife Co., Pittsburgh.
F. B. Hufnagel, president, Pittsburgh Crucible Steel Co. of America, Pittsburgh.
Archibald Jones, metallurgist, American Steel & Wire Co., Pittsburgh.
D. A. Lyon, acting director and chief metallurgist, bureau of mines, Washington.
W. E. Moore, president, Pittsburgh Electrical Furnace Corp., Pittsburgh.
George H. Neilson, vice president, Braeburn Steel Co., Braeburn.
C. F. W. Rys, chief metallurgical engineer, Carnegie Steel Co., Pittsburgh.
S. G. Stafford, Vulcan Crucible Steel Co., Aliquippa.
R. E. Zimmerman, assistant to vice president, American Sheet & Tin Plate Co., Pittsburgh.
Edward Steidle, Carnegie Institute of Technology, Pittsburgh, secretary.

Getting Most Out of Fuel Oil

Study of Performance of Oil-Fired Industrial Furnaces Indicates Factors Affecting Proper Combustion and General Efficiency—Type of Furnace and Continuity of Operation Important Considerations

By Max Sklovsky

INTEREST in research for more economical use of fuel oil was stimulated in 1912 by the radical increase in price which took place during that year. In searching for a substitute fuel, it soon was discovered that it would be a serious detriment to production and production costs to substitute solid fuels, such as coal or coke, and it was found also that the price of gaseous fuel which could serve as a substitute was prohibitive in the majority of cases by reason of the cost of the installation of gas-making apparatus. A check-up in one case, as illustrated in Fig. 2, indicates the production range on an ordinary forge furnace, on an ordinary fuel oil furnace, and on an improved type oil furnace. The corresponding production units range from 450 to 1250 and up to 3100. The corresponding cost is indicated in the figure adjacent to each diagram, showing corresponding cost of $1.50 to $2.75 and $3.50 per 100 pieces. Fig. 3 gives relative labor and fuel cost on the same furnaces, showing on the coke furnace a labor cost of $16.50 plus a fuel cost of $3.50; on a regulation type of fuel oil furnace a labor cost of $8.50 and fuel cost of $2.50; and on an improved type of oil furnace a labor cost of $2.80 and a fuel cost of $1.20. This investigation has proven that the advantages of liquid fuels are so great, both as to production as well as labor costs, that the cost of fuel is relatively a minor item, that in place of substituting another fuel it would prove advantageous to continue the use of fuel oil, and that active effort should be made in the direction of more economical use of such fuel to reduce fuel cost as well as to conserve supply.

Investigation of the various types of furnaces and their combustion in general use at the time indicated a very wide fluctuation in the economy of such furnaces. A total of 251 individual furnaces were checked up and classed into six groups with economy results as follows:

	Per cent
Box type	11.6
Rotative type	9.65
Continuous thoroughfare type	13.8
Continuous type, another group	17.5
Welding furnaces	8.9
Open type	1.2
Average for 251 furnaces	9.2

This group applies to types of furnaces specially developed for production purposes and adapted for a limited number of jobs. The average economy as a whole, all over the country, is scarcely 5 per cent. By the per cent of economy is meant, in this case, the ratio between the heat contained in the metal and the heat contained in the fuel supplied to the furnaces.

The striking inefficiency of metallurgical furnaces brings up the question as to what becomes of the heat. Experiments with a small forge furnace indicated that 9 per cent of the heat was utilized, 47 per cent went up with the spent gases, and the balance, 44 per cent, was radiated. This same furnace was rebuilt with a 9-inch wall and arranged with proper and suitable openings. This simple change resulted in 18 per cent saving in fuel, all of which was obtained by reducing the radiated heat from 44 down to 26 per cent.

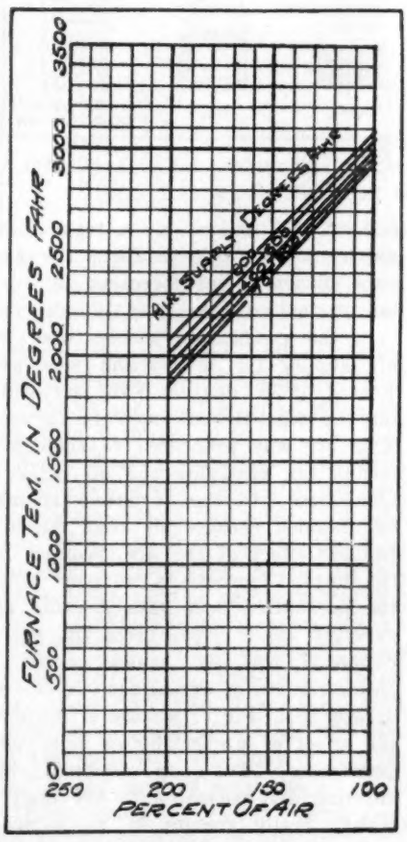


Fig. 3—Effect of preheating on final temperatures

It appears at first glance that, for the purpose of production and fuel economy, the high temperature of a furnace is the most important factor, and further that as such high temperature is a result of the elimination of dilution by excess air, all that would be necessary is to control this excess air by some simple device. It is a fact, however, that attaining such control is not so simple as it appears. The combustion of liquid fuel and particularly fuel oil is accompanied usually by a large amount of excess air, such excess air being usually about 100 per cent in the average furnace. Even under favorable conditions such excess air is rarely under 50 per cent. An enormous dilution, therefore, exists, with consequent reduction in temperature, which in turn reduces the economy as well as the productive capacity.

The immediate reason for oversupply of air in combustion of fuel oil is the elimination of smoke. A smoky furnace is not suitable ordinarily for production purposes and it has been found that the injection of excess air readily eliminates the smoke from the furnace. The real difficulty lies in the relatively slow combustion process. To demonstrate, fuel and air may be injected in a furnace at a lineal velocity of 100 feet per second. With a furnace of ordinary size, five feet in length, this mixture reaches the other end in 1/20 of a second. During that period complete combustion must take place, that is, before the fuel mixture traverses the complete distance of the furnace. The air is injected in the form of a gas, whereas the fuel is used in the form of a fine liquid spray. Even so the sprayed particles of the liquid are billions of times larger than the molecular oxygen units in the air. In order to obtain complete combustion there must be a complete intermixture of the fuel and the oxygen. To accomplish this the fuel must therefore be converted into a gaseous form, otherwise the combustion takes place on the surface of the sprayed particles of fuel; and before that is completed the mixture is

From a paper presented before the meeting of the American Iron and Steel institute, New York, Oct. 28, 1925. The author is chief engineer, Deere & Co., New York.

frequently exhausted from the furnace into the atmosphere at which point chilling takes place, combustion ceases and smoke ensues. It has been found that thorough agitation accompanied with excess air increases the rate of combustion and thereby eliminates the smoky effect referred to.

Making Combustion Complete

Mixing of a fuel with air when both are in a gaseous condition gives smokeless combustion under nearly all conditions, hence the conversion of the fuel into a gaseous form prior to admission into the furnace proper should permit complete combustion at a rapid rate with less excess air.

Experiments were conducted on a small forge furnace having a hearth volume of about 3 cubic feet. The furnace was equipped with an ordinary spray type burner and measurements indicated the consumption of 11.3 gallons per hour. By equipping this same furnace with a gasification fixture, it was possible to obtain complete combustion without smoke and permit the same quantity of stock to be heated with a fuel consumption of 6.5 gallons per hour. The gasification of the fuel permitted the use of less excess air, increasing the furnace temperature materially, hence requiring less fuel to heat the burden.

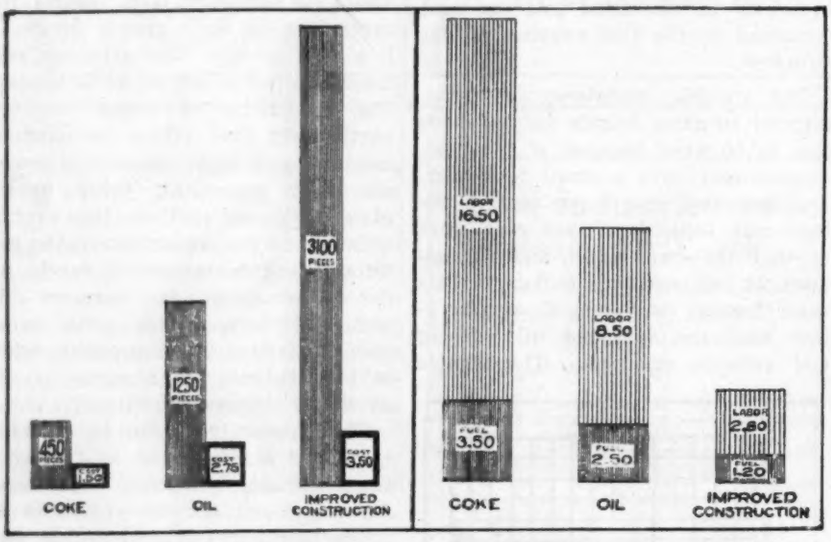


Fig. 2 (Left)—Production range and cost per 100 pieces.

Fig. 3 (Right)—Labor and fuel costs per 1000 pieces

It had been noted previously that the fuel mixture in a furnace passes through so rapidly that it remains in the furnace only a fractional part of a second and thereby the products of combustion do not give up the heat to the furnace to the extent that would be possible were such products allowed to linger longer in the furnace. By the construction of a stock preheating chamber in the exhaust passages of the furnace, such furnace is effectively increased in capacity without increasing the primary heating chamber. By the process of preheating the stock a further reduction of one gallon per hour on the same furnace was obtained, and the oil consumption was reduced to 5.5 gallons per hour. The proportioning of the furnace to the product also had an effective result upon fuel economy. For further tests, therefore, a new furnace was substituted, in which the gasification of the fuel and the preheating of the stock were provided for and the furnace was advantageously proportioned in reference to hearth size, fuel openings, and wall thickness, with the result that the fuel consumption was finally reduced in daily use to 4.1 gallons per hour, a reduction of 7.2 gallons from the initial practice of 11.3 gallons, or a total of 64 per cent. In this instance the furnace efficiency was increased in regular production from 6 to 17 per cent.

In the gasification process used the air supply for combustion was preheated to 700 degrees Fahr. by utilizing the exhaust heat from the furnace. This air was preheated to furnish a means for gasifying the oil prior to admission into the furnace. It may be assumed erroneously that the preheating effect of the air accounts for the marked increase in economy. While the preheating does have a value, the greatest value comes from the gasification of the fuel, which permits a closer control of excess air. To demonstrate this, Fig. 1 shows a chart of the effect of preheating on final temperatures. The top diagonal line showing air preheated to 800 degrees Fahr. finally results in an increase in temperature of combustion of only about 175 degrees. This is an appreciable increase, but not in keeping with the increase that had been expected.

It had been indicated previously that higher temperatures radically affected the rate of heat transmission in a furnace. On the other hand it is generally assumed, and quite naturally, that to maintain higher temperatures takes a greater amount of fuel. To demonstrate this, a series of experiments were made, showing the oil consumption and furnace temperature. The furnace was of the ordinary type with an ordinary spray method of injecting the fuel. As the temperature rose from 1800 to about 2400 degrees Fahr., the fuel consumption gradually increased from about 4.8 gallons per hour to 6.9 gallons per hour—a material increase but not in proportion to the effectiveness of heating at the higher temperature. From 2400 to 2600 degrees Fahr. the increase in fuel consumption was from 6.9 gallons to 7.3 gallons, a lesser increase than the previous one. From 2600 to 2800 degrees Fahr. there is only an increase of 1/10th of a gallon per hour.

In a series of tests made on the same furnace, except that there was a pre-mixing and gasifying device for the fuel, the results were rather surprising in that from 1800 to 2400 degrees Fahr., the fuel consumption remained substantially constant and from 2400 to 2800 degrees Fahr., the fuel, instead of increasing to maintain the higher temperature, actually decreased. What occurred to produce a lower fuel consumption was that, after the temperature of the furnace advanced to a higher degree, the gasification under those conditions became more effective and permitted a constantly decreasing air supply or a continuous reduction of excess air within the furnace. This reduction of excess air permitted an increase in temperature and at the same time a reduction in fuel consumption. The answer to the question as to the fuel consumption for higher furnace temperature is that higher temperature does not necessarily mean greater fuel consumption and that, where higher temperatures are advantageous, fuel economy is also obtainable.

Preheating Fuel Oil Satisfactory

Preheating of liquid fuel by heating and gasification before admission to the furnace works satisfactorily on ordinary fuel oil without difficulty. The temperature required to gasify such oil is about 700 degrees Fahr. The air is therefore heated to that temperature before the oil is introduced to mix with it. There are some oils, however, which at temperatures of 700 degrees Fahr. tend to

crack and deposit carbon in the gasifying apparatus, thereby interfering with proper operation of the furnace. Experiments were conducted with the object of eliminating vaporizing fixtures, by direct introduction of fuel oil in the furnace, causing the vaporization of the oil and mixing same immediately upon entrance into the hearth of the furnace. This consisted in introducing a diaphragm near the nozzle, as illustrated in Fig. 4. It will be noted that this diaphragm, which is made of refractory material, has an opening opposite the nozzle which permits the mixture to pass through without interruption or deflection into the hearth of the furnace. It is to be noted also that the opening in the diaphragm is larger than the opening of the nozzle, with the result that, due to the velocity of the air and fuel mixture, a suction is established in the diaphragm opening, which draws in some of the hot gases from the hearth around the diaphragm, so that within the diaphragm opening there is a violent mixing of extremely hot gases with the incoming mixture, thereby instantly vaporizing the sprayed oil and causing the most rapid combustion. Fig. 5 shows a modified form for practical construction in which, in place of a diaphragm set out into the hearth, the wall construction at the nozzle is such as to permit a recirculation of enough of the hot gases from the furnace around the diaphragm which is set into the wall, permitting the adoption thereby of a substantial construction.

Smaller Furnace Is Possible

It may be pointed out in this connection that ordinarily the highest temperature within the furnace is located on the side opposite to where the fuel mixture enters. By this recirculation method through the diaphragm the combustion occurs earlier, that is, in the space near the entrance of the fuel blast in the hearth. As a consequence the entire hearth is more uniformly heated and it can therefore be utilized to the fullest extent, with the result that a smaller chamber can be used and therefore with less fuel consumption. The oil in this case is admitted into the nozzle near the wall so that but little preheating of the oil takes place and permits the use thereby of any grade of oil, light or heavy, without any carbon formation. It also permits the use of the highest temperature in the air. Temperatures of 1000 degrees Fahr. or more can be used without any risk of pre-ignition.

Maximum value of the fuel is obtained when the combustion takes place within the hearth and not in chambers extraneous to the hearth. Such devices as combustion chambers serve the purpose frequently of enlarging the furnace and causing excess fuel to be used. Fig. 4 indicates diagrammatically a furnace chamber with a diaphragm as described, an air preheating or recuperating fixture and the air connections to the nozzle and oil supply line to the nozzle at the entrance to the furnace. The amount of recuperation depends upon the exhaust temperature of the gases from the hearth and upon the fixtures used for heating the air for combustion. The diaphragm has the effect of inducing circulation of the gases in such a manner as to heat the furnace hearth uniformly and all over. Deflectors have been used at times for recirculation purposes but as reflectors or baffles cause concentrated combustion at such baffles, the baffles deteriorate rapidly.

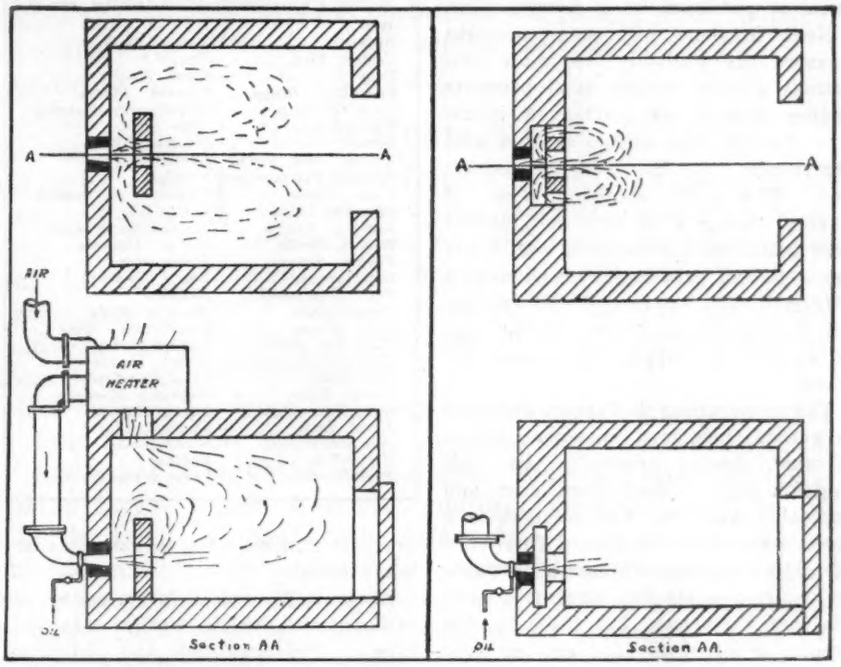


Fig. 4 (Left)—Furnace with diaphragm to mix hot gases from hearth with incoming air and fuel mixture. Fig. 5 (Right)—Modified form of construction with diaphragm set into the furnace wall

Better fuel economy is obtainable, as indicated above, by higher furnace temperatures and by controlling the ratio of air to fuel. Other items of economy, as indicated, consist in air recuperation and in preheating of the stock in a preliminary operation by utilizing the exhaust or spent gases emanating from the combustion chamber. The first two items deal with efficiency in combustion and the latter two deal with efficiency of utilization of the heat of combustion.

Other means also exist which permit better economy in the using of liquid fuel. These are influenced by the furnace construction. Among these is the furnace size. As indicated previously, furnace efficiency averages about 5 per cent; the balance of the heat is wasted, the waste being ordinarily 95 per cent. This waste is a factor of the furnace; and the quantity of waste, that is, the amount of fuel used to sustain the temperature in a furnace which is termed usually the "furnace factor," is mainly dependent upon the size of the furnace. For example, a furnace using 15 gallons of oil per hour under full production, may under idle conditions use 60 per cent, or 9 gallons per hour, to maintain the working temperature.

A factor affecting fuel economy is that of continuity of operation. The initial building up of temperatures takes an appreciable period of time and consumes fuel. When such period is followed by a short operating period, the fuel consumed for the first period is frequently as much or greater than that consumed during the utilization period.

Three Roads to Economy

As may be gathered from the foregoing, three distinct directions of effort may be applied for obtaining better fuel economy:

1. Proper combustion efforts.
2. Better furnace adaptation and construction.
3. Better attention to the furnace.

The goal of obtaining an average of 15 per cent efficiency on the whole is worth while and within practical attainment.

Large Uses of Steel In Small Ways

THE manufacture of wrought washers constitutes true conservation. From crop ends of sheets or odd sizes of sheets, usually destined to be remelted, it creates its own standard product, then turns over to the scrap trade close to half of the 50,000 to 60,000 tons of raw material it purchases in a normal year.

Next to bolts and nuts, wrought washers are probably the most ubiquitous of the smaller steel products finding general application in industry. At least one washer is used with practically every bolt and nut connection. The most common size of washer, fitting a ½-inch bolt, counts 5200 pieces to a 200-pound keg, while the smallest practical size, fitting a 3/16-inch bolt, counts 78,800 pieces, yet it requires 25,000 to 30,000 tons of washers to supply the annual demand.

The term wrought washer, although in general use, is a misnomer today. It was intended originally to distinguish the product from cast and malleable washers. Cut washers is a more accurate term now. There are 12 to 15 large manufacturers of washers, while possibly 200 consumers manufacture their own, but basically the process is identical. The smaller sizes are cold punched; the larger sizes are hot pressed.

Sheet mills are a large source of raw material for the washer manufacturers. The crop ends and odd sizes, 6 inches and over in width and 2 feet or more in length, are sought. Obtaining this material is generally attended with difficulty. If the demand for sheets is light mills have less waste to sell; if the demand is good, buyers are not so exacting and the percentage of waste is correspondingly lower. Material purchased from the scrap trade is inspected for rust. Frequently users of sheets have waste that is suitable.

Only black sheet waste is used. Material arriving in mixed cars is sorted for gage. Then it is sent to the shears to be cut to suitable lengths, the greater the length the more economical the handling. As many as 12 washers are punched at one operation, most of the dies operating vertically but a few horizontally. The washers are then well tumbled and usually taken to a sorting table for the removal of half moons, slugs or other imperfections. Some manufacturers put their washers through a screen.

A small percentage of the total output is galvanized or sherardized, always after forming. Sometimes washers are plated to give brass, aluminum or other finishes. For fine

(*Concluded on Page* 313)

Washers

THIS is the fifty-sixth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the great American tonnage.

The first article on "corsets" appeared Nov. 22, 1923. Other articles appearing fortnightly since are:

Pins	*Razor Blades*
Cotton Ties	*Pens*
Toys	*Steel Wool*
Spinning Rings	*License Plates*
Card Clothing	*Hypodermic Needles*
Tie Plate	*Shoe Steel*
Tacks	*Crushed Steel*
Knives and Forks	*Skates*
Surgical Instruments	*Needles*
Fence Posts	*Phonograph Needles*
Eyeglass Cases	*Golf Clubs*
Fishing Tackle	*Mechanical Pencils*
Dental Drills	*Burial Caskets*
Pocket Knives	*Telephones*
Rat Guards	*Radio Towers*
Snap Fasteners	*Brushes*
Paper Clips	*Electric Bells*
Steel Vests	*Bookbinder Wire*
Electrical Conduit	*Sucker Rods*
Radiator Furniture	*Watch Hands*
Notebooks	*Steel Furniture*
Metal Beds	*Highway Markers*
Bolts and Nuts	*Camp Cots*
Metal Lath	*Flexible Shaft*
Tin Cans	*Wood Pipe*
Umbrellas	*Buttons*
Steel Barrels	*Sheet Metal Screws*

WASHERS ARE SUBJECTED TO HEAT TREATMENT 15 OR 20 MINUTES IN THIS GAS-FIRED OVEN AND AUTOMATICALLY EJECTED AT THE FURTHER END

Editorials

American Foreign Trade Swells

MUCH food for reflection is to be found in the country's record of foreign trade in 1925. Imports and exports were the highest for any year since 1920, but compared with 1924, imports increased by 17 per cent, while exports increased by only 7 per cent. The excess of exports over imports in 1925 was 30 per cent smaller than it had been in the preceding year. By some, these figures are taken to mean that imports are rising too rapidly relative to the gain in exports—that the country is nearing the time when European competition will suffocate domestic industry by an excessive inflow of cheap goods.

Closer examination, however, does not yield up any cause for immediate apprehension. In 1925 about 40 per cent of all imports was raw materials.

This compared with 33.6 per cent in 1924. At the same time, the country was sending out only 28 per cent of its exports as raw materials, while 40 per cent of them was in finished goods, a sharp gain over the ratio of these exports in 1924. This would seem to indicate that the country's prosperity has stimulated industrial activities and created a larger demand for foreign raw materials. At the same time the proportion of exports of finished goods has risen to a high figure. This is a tribute to America's genius for low cost quantity output, and a forecast of the country's ability to hold its own against the coming stern foreign competition in international markets. Clearly, as the world slowly pulls itself back to a normal state, its prosperity and living standards are increasing, and its ability to purchase larger amounts of goods is rising. In this expanding world trade America should share in good measure.

Cost Limits Use of Alloys

CHEAPER and better than steel." That is something to think about. Lighter alloys than steel having great strength, and presenting high resistance to corrosion are fairly well known. They cost much more than steel, and consequently their use is limited. But Edward S. Jordan, president of the Jordan Motor Car Co., Cleveland, in an address to automotive engineers in New York a few days ago, spoke of an alloy that would be cheaper as well as lighter. What he said was more in the nature of a vision than a forecast of any definite development for the immediate future, yet a number of events and desires in the minds of great industrialists today point to the possibility of developments somewhat along the line that Mr. Jordan hopes to see. The Pennsylvania railroad is experimenting with an alloy of aluminum that it hopes to use in the place of steel for certain requirements. Not many years ago aluminum was a precious metal; now it is an important material of manufacture. Price is the greatest obstacle in the path of wider application of ferrous and nonferrous alloys.

Trade Contact Wins Progress

IN FORMING the Concrete Reinforcing Steel institute last year the reinforcing bar industry ventured into the realm of group understanding and consciousness. That it has been worth while is evidenced by the fact the industry has entered 1926 the best fundamentally in its history.

Much has been accomplished internally since the decision to organize was reached at Pittsburgh 14 months ago. Proposed betterments include a concise, uniform sales contract to be adopted if the referendum of members is favorable to the form suggested, as it doubtless will be. Standard practice on bundling and tagging is coming under discussion as a further means toward uniformity.

A uniform warehouse cost basis has been widely adopted. Uniform engineering, selling and cartage costs will be considered next. Monthly tonnage reports provide the industry with its first real insight into shipments and current warehouse stocks. The institute's representation at government conferences on standardization and elimination of waste has given the industry added prestige.

But marked as these accomplishments are, they are subordinate to the mutual understanding and confidence that has been engendered. The institute has for the first time brought together the elements composing the industry. Contact of membership in an organization promoting a common cause has promoted appreciation of each other's problems.

Baneful and wasteful practices have been eliminated and competition placed on a more intelligent and human plane. On such a basis the

concrete reinforcing steel industry cannot help but progress.

Making Meetings More Valuable

TECHNICAL meetings of the American Society for Steel Treating, both national and sectional, always have been maintained on a high plane and the winter sectional meeting held in Buffalo last week will take rank with the best. The sessions of that convention were notable in two respects, namely, the papers were of more than average quality and ample time was provided for their presentation and discussion. On various occasions IRON TRADE REVIEW has pointed out that many societies attempt to present too many papers in a limited time, with the result that none gets its entitled attention, either in reading or criticism.

Sessions at last week's meeting in Buffalo were limited to two hours and only two papers were scheduled for each session. The result was each paper received its merited consideration and an unusual amount of discussion followed. Conventions usually are so crowded with events that those who attend move about under a nervous tension, jumping from one thing to another and accomplishing little of value. The steel treaters' meeting was conducted with a noticeable air of ease, ample time being provided for renewing friendships and exchanging ideas. These do much to make conventions worth while. Numerous expressions of satisfaction were heard on the conduct of the meeting.

As mentioned before, all papers were more than average but one prepared by E. C. Bain was extremely valuable. This work described for the first time the development and preservation at room temperature of delta iron solid solution in iron-chromium alloys. Delta iron is the constituent which is formed when the material is heated above the austenite range and quenched thus suppressing austenite. Delta iron and alpha iron are physically identical. The formation of delta iron has been obtained by one other investigator and his results are to be reported in February. Before long, much more will be heard of delta iron and its characteristics.

Groups Seek Healthier Competition

MOST of the steel industry can sympathize with the efforts of fabricators of structural steel in the Mississippi valley to acquire group solidarity and minimize unhealthy competition. Last year these fabricators did a record-breaking volume of business but their profits were so small as to make most discomforting the contemplation of what would have happened had 1925 been only an average year. They are determined not to endure these conditions in 1926. A similar situation applies with equal force to other districts.

Competition between two makers of plain material in the West gave the fabricating interests an impulse into an area of low prices. Contractors and buyers of steel took a hand and prices suffered some more. Most disheartening of all was the failure or inability of fabricators to hold firm their bids. Buyers pitted one seller against another, and squeezed the last dollar out of a job. Last year was as unsatisfactory in regard to profits as it was satisfactory in the matter of tonnage.

In few cases did the actual decision to proceed with a project hinge upon whittling down the cost of steel. What fabricators lacked was the determination and courage to bid a fair price and hold to it. Too often they allowed buyers, contractors or other agencies to dictate prices, fearing that unless they followed demands for lower prices some other seller would step in and take the tonnage. A definite stand early in the year would have been impressive and might have made 1925 one of the most profitable in history. If these fabricators can gain a sufficient measure of confidence in each other to insist on a fair price and not permit themselves to be beaten down they will have rendered a distinct service to the entire steel industry.

What Our Readers Are Thinking

Proposes Pig Iron Definition

To the Editor:

IN THE Jan. 21, 1926, issue of IRON TRADE REVIEW, on page 240, I noticed the definition of pig iron as set forth by the American Iron and Steel institute. This definition does not seem to be good.

While I was with the Algoma Steel Co. at Sault Ste. Marie, Ontario, the Canadian government was paying a bounty on pig iron. In September, 1905, we began to deliver direct metal from the blast furnace to the bessemer department. The resident government inspector would not allow any bounty on the molten iron, because he said it was not pig iron. The matter was taken before the government officials, and a definition of pig iron was agreed upon. This definition seems to cover all the requirements and I suggest that it be adopted instead of the definition published in your issue of Jan. 21. This definition is as follows:

"Pig iron is the metallic product of an iron blast furnace."

RALPH H. SWEETSTER, *Assistant to the vice president, American Rolling Mill Co.*
Columbus, O., Jan. 21, 1926.

The Reader's Page

Vol. LXXVIII, No. 4 IRON TRADE REVIEW Jan. 28, 1926

How Was the Steel Corporation Born?

MORGAN sat listening to Schwab, thoughtfully, intently, as the young steelmaster, full of enthusiasm, talked of the possibilities for a merger of iron and steel companies. This was at a dinner a quarter of a century ago. The financier was so impressed by what he heard he proceeded to piece together the physical and financial elements that made up the United States Steel Corp., as originally organized. This is Ida Tarbell's version of the formation of the corporation as she gives it in her biography of E. H. Gary. It was Gary, according to her book, who breathed the breath of life into the enterprise, who established it on firm footing. The book, and the review as published in this issue of IRON TRADE REVIEW, are penetrating. Intelligent reviews of books of general or technical interest are one of the features of IRON TRADE REVIEW.

Making High-Speed Steel.
Page 261.

Contents

SPECIAL ARTICLES

Making High-Grade Steel—IV.....
.....*By John A. Coyle* 261
Pulverizes Coal at the Furnace.....
.....*By E. C. Kreutzberg* 262
"Be Fair", Wins Gary Place in History.....
.....*By J. F. Froggett* 264
Book Reviews 265
Cast Iron Pipe Making Improved..... 266
.....*By Frank Grossman* 266
Anecdotes—Gary, Schwab, Ford..... 267
New Laboratories Represent Co-operation.... 270
Getting Most Out of Fuel Oil.....
.....*By Max Sklovsky* 271
Large Uses of Steel in Small Ways—
Washers 274
Editorials 275

BUSINESS TREND

Steel Castings Reveal Roads' Buying.....
.....*By John W. Hill* 278
Steel Castings 278
Business Index 279
Bradstreets Prices 279
Coke Production 280
Freight Traffic 280
Independent Sheets .. 281
Structural Awards .. 281

MARKET REPORTS

Review of Markets.....*By C. J. Stark* 282
Iron and Steel Prices.....283, 284, 288, 316, 322
Pig Iron 285
Coke 286
Ferroalloys 286
Semifinished 287
Plates 287
Iron and Steel Scrap 289
Sheets 289
Tin Plate 290
Pipe 290
Nuts, Bolts, Rivets.... 290
Bars 291
Cold Finished Steel 291
Structural Shapes 292
Reinforcing Bars 293
Iron Ore 293
Railroad Equipment 294
Wire and Nails 294
Nonferrous Metals .. 294
Coke By-Products.... 295
Pacific Coast Markets 296
Foreign Markets 297
Machinery Markets .. 298
Crane Inquiry and Awards 298
Warehouse 316

GENERAL NEWS

Steel Imports Jump; Exports Drop..... 299
Steel Treaters Meet at Buffalo..... 301
Clarifies Blast Furnace Capacity..... 304
Pig Iron Rate Cuts Extended..... 308
Trade Bodies Probe Arouses Ire..... 309
Industrial Men in the Day's News—
Edwin Corning 311
News of Societies..... 306
Here and There in Industry 310
Men of Industry 312
Obituary 313
Business Changes 314
Construction and Enterprise 315
Trade Publications 319

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John D. Pease ..... Advertising Director
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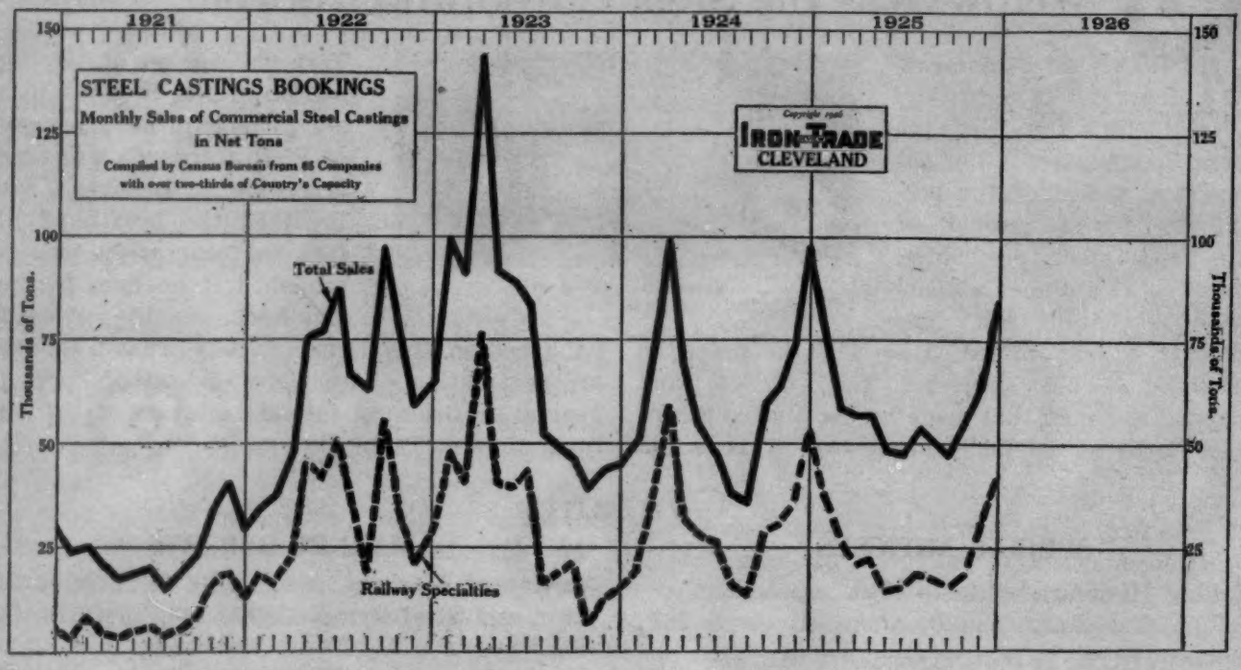
The Business Trend



Steel Castings Reveal Roads' Buying

By JOHN W. HILL, Financial Editor

MUCH is expected from the railroads in the way of equipment purchases in 1926. It is even hoped that they will step into the breach and prop up any sagging ends of business prosperity that may appear during the year. For that reason all straws and indications of railroad buying tendencies are now of unusual interest.

IN THE record of steel castings bookings such indication is to be found. As shown by the accompanying chart, December castings sales gained. The greater part of the increase was due to heavier buying by the roads. Aggregate bookings jumped from 69,638 tons to 85,397 tons, the best figure since December 1924.

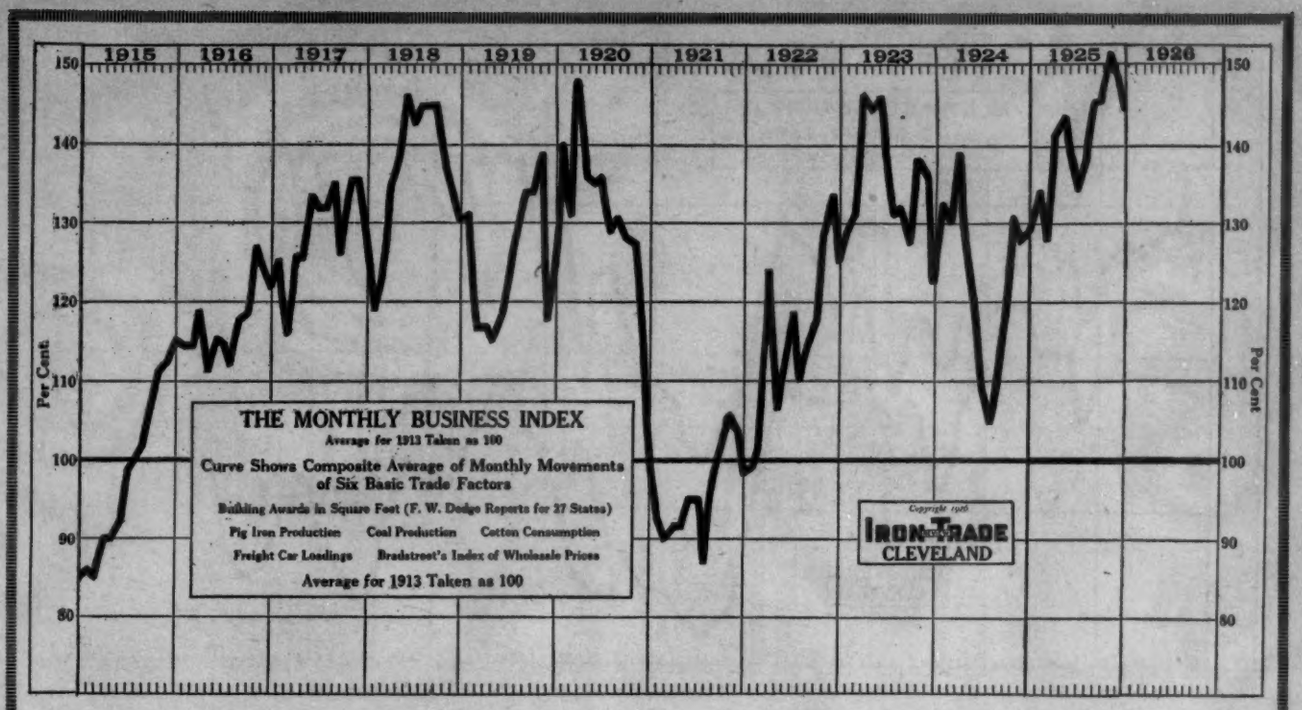
DURING the month, sales of railway specialties stood at 43,215 tons, an increase of 38 per cent over the November total. Miscellaneous castings booked totaled 42,182 tons, a gain of 12 per cent over November. Both figures were the largest in a year. Railway specialty shops were booked at 100 per cent of their capacity.

THIS is evidence of a favorable nature. It is supported by the unprecedented traffic of 1925 and the best earnings in the history of the roads. For the moment the pressure on the roads to buy new equipment has been considerably lessened, the result of seasonal slackening of freight movements.

IDLE cars which numbered about 100,000 at the traffic peak in October have now climbed back to 310,000 cars. Freight movements have declined sharply because business is in its customary trough between the holiday season and spring activity. Taking the time of the year into consideration trade is satisfactory.

GREATEST impetus in the ordering of new equipment probably will come with the consummation of some of the big rail mergers now pending. To the Van Sweringen consolidation has now been added the plan of a $875,000,000 merger of the St.Louis-San Francisco railroad and the Chicago, Rock Island & Pacific.

The Business Trend

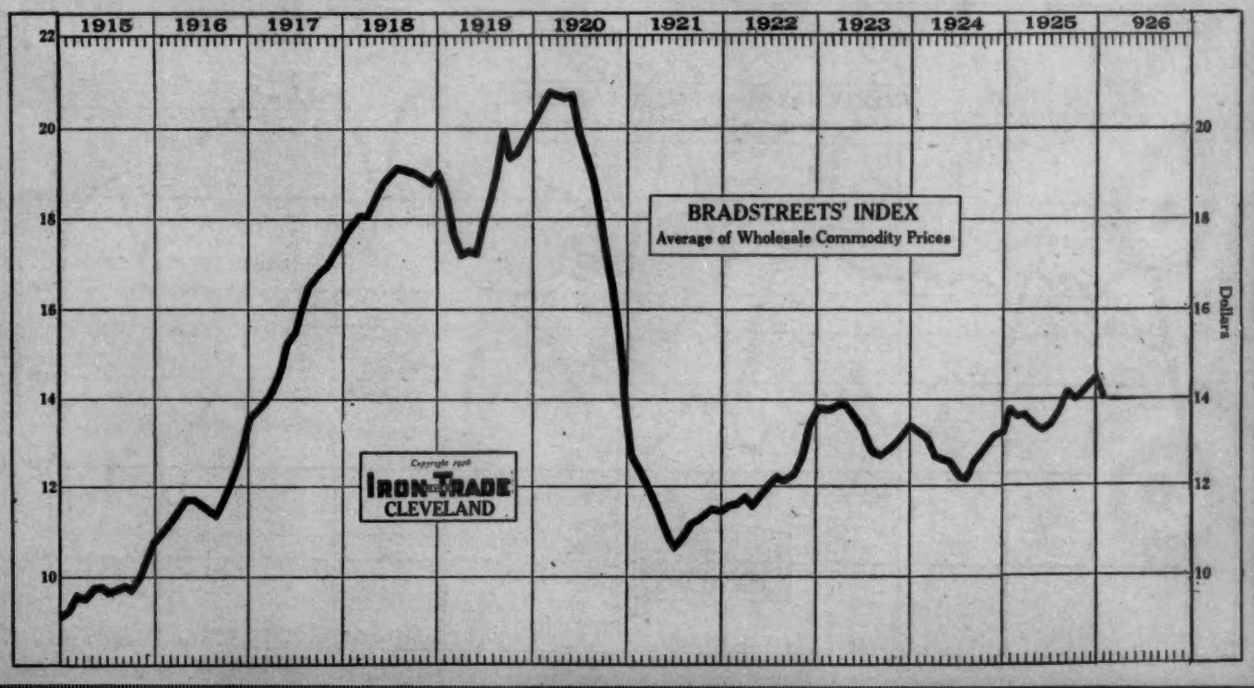


Business Index

SOME slight seasonal relaxation in industry is reflected in Iron Trade Review Monthly Business Index for December. The number stood at 145.3 compared with 149.1 one month before. The great increase of activities over one year before is seen in the fact that the index for December, 1924, was 129. Last December factors comprising the index which advanced were cotton consumption, coal and pig iron output. Freight traffic, Bradstreet's prices and building construction awards declined.

Bradstreets Prices

ABSENCE of price deflation is definitely indicated by Bradstreet's Index of commodity prices for Jan. 1. The number declined by 2.7 per cent compared with one month before. The advance of the preceding three months was practically cancelled. The recession in December was largely due to the decline for rubber, although livestock, textiles, metals and oils were lower. The index now stands virtually where it did one year ago. Compared with the low point of 1924 a gain of 14 per cent was shown.



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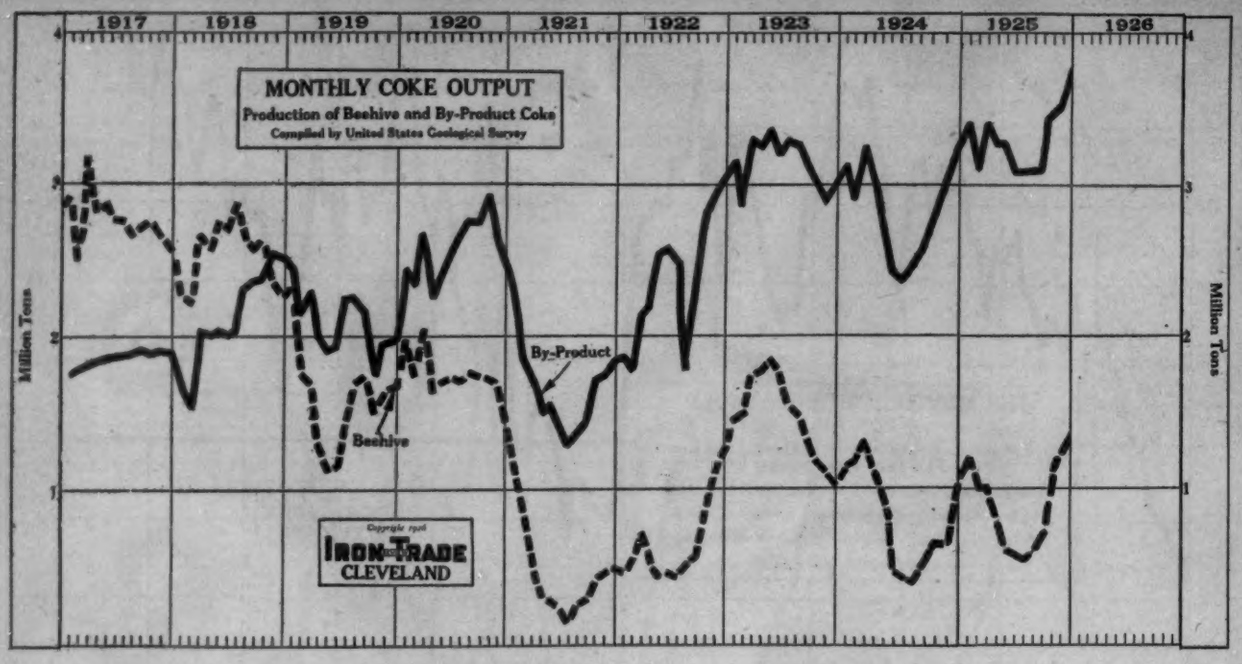
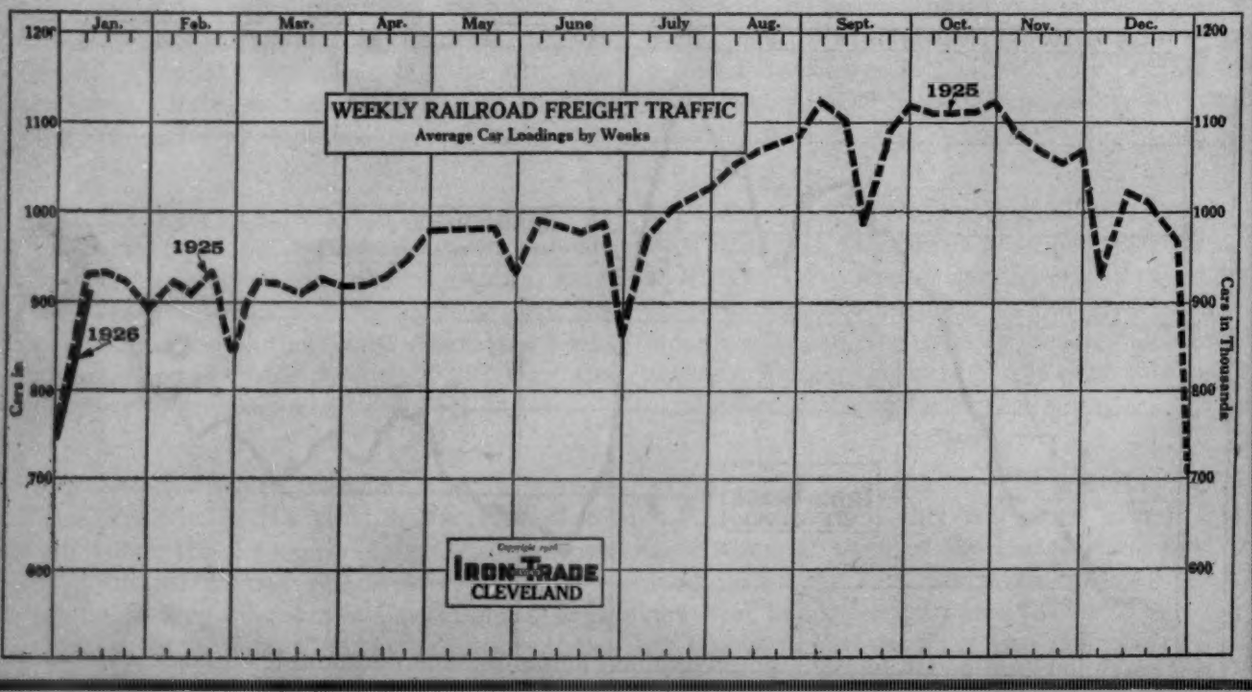


Coke Production

COKE prices and production continue to be stimulated by the hard coal strike and by large scale activities of the iron and steel industry. The output of by-product coke in 1925 reached a new high record. The monthly average of 3,332,000 tons compared with 2,833,000 tons in 1924. The production of beehive coke of 10,713,000 tons in 1925 compared with 10,286,000 tons in 1924. December by-product coke output totaled 3,760,000 tons, the year's peak. Beehive reached 1,307,000 tons, also the 1925 peak.

Freight Traffic

THE new year has started with freight movements a shade below those for the same period one year ago. In the first full week of January, loadings totaled 907,119 cars. This was 27,000 cars less than the total for the same period of 1925, but it was 35,096 cars above the total for the corresponding week of 1924. Because of the sharp seasonal decline in loadings idle freight cars have increased rapidly and on Jan. 7 they stood at a total of 310,000, a gain over about 100,000 in October.



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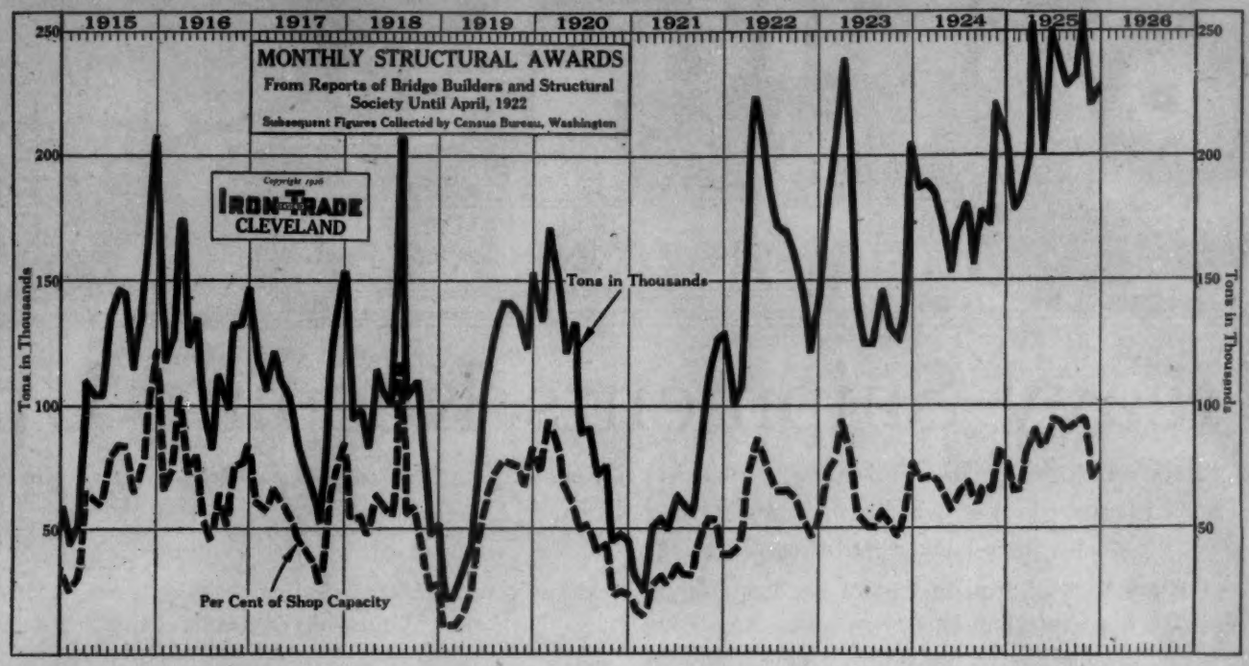
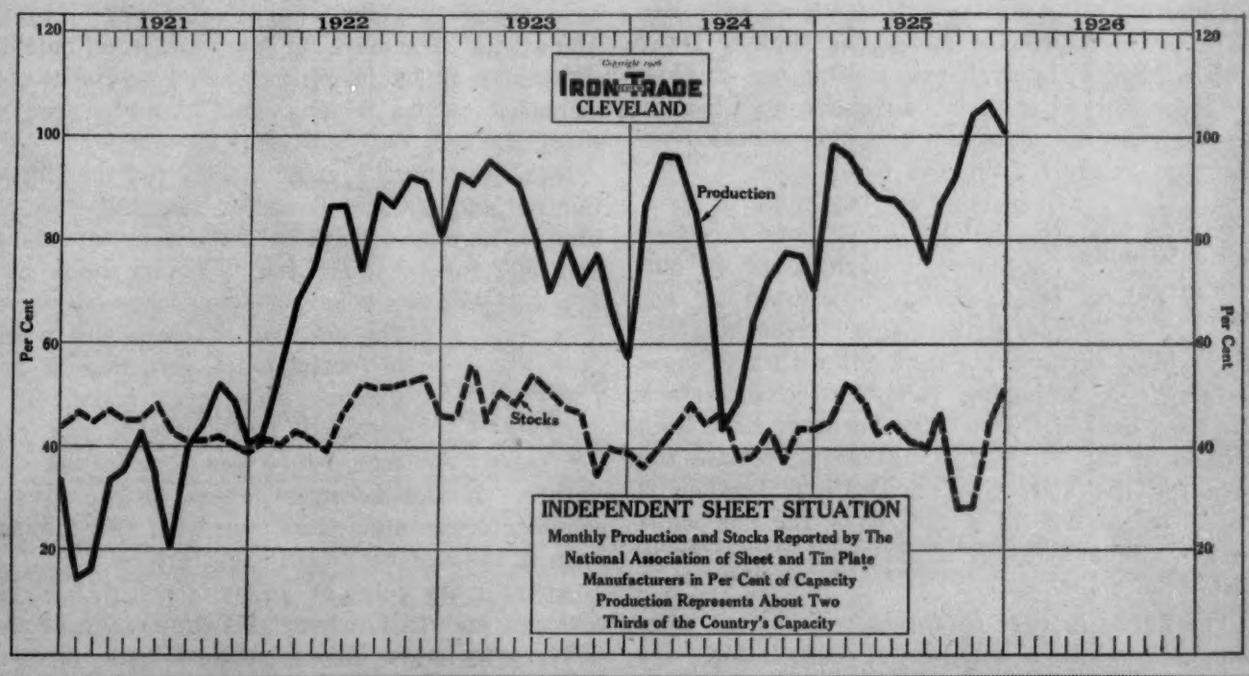


Structural Awards

NINETEEN twenty-five was a year of large activity for all branches of the construction industry. Steel fabricators were stimulated to the biggest production on record. The total for the year, as computed by the department of commerce, was 2,708,400 tons. This compared with 2,426,040 tons in 1924 and with 2,188,800 tons in 1923. The industry operated at an average rate of 74 per cent of shop capacity during the year compared with 69 per cent in 1924. December brought gains over November.

Independent Sheets

THE demand for sheets in 1925 was on a high scale. Outputs, shipments and sales reached unprecedented levels. This was due to the surpassing activities in both the building and the automobile industries. The peak month for sheet production was November when mills were operating at 107.9 per cent of their normal capacity. In December operations declined to 100.7 per cent of capacity, and January has brought further loss. Stocks have been rising in recent months and reached a peak in December.



Heavy Shipments Keeping Up

Smaller Volume of New Tonnage, However, Sharpens Competition—Eastern Mills Invade Chicago—Coke Conditions Cause Blast Furnace Curtailment—Mills Resist Pressure for Lower Automobile Sheet Prices—Consider Sheet Mill Wages

SHIPMENTS of iron and steel are keeping up at a high rate and this represents the strong foundation of the market. New business, however, is developing more slowly than was the case a few weeks back, signifying both the well-covered position of buyers and their complacency in discounting future needs, which present prospects indicate will be heavy. The general conviction that higher prices are not probable soon is an important factor and developments this week appear to have made early advances even more remote, leaving the market still largely in the hands of the buyers.

Because of the more irregular flow of incoming tonnage, some producers are disposed to be more aggressive in seeking business and competition has been sharpened. Pittsburgh and eastern makers have invaded the Chicago market quoting on a parity with the local mills and in plates in Milwaukee have gone slightly lower with a 1.80c Pittsburgh price. This has checked the recent talk of price advances at Chicago. Black sheets are uncertain and blue annealed reflect the pressure from the plate mills.

Coke Checks Output

Operations are beginning to show the halting effect of excessive coke prices brought about by outside demands occasioned by the coal strike. One Pittsburgh steelworks blast furnace has gone out with this cause assigned. A Mahoning valley merchant stack has been banked. Two other furnaces have been banked in the Pittsburgh district to release the coke for the attractive market and another is slated to go out in a few days for the same reason. Some shortage of cars also is interfering with coke deliveries.

The flurry in coke continues with prices more composed while a number of negotiations are under way. On run-of-oven coke the market ranges from $9.50 to $11 with sales even higher.

Demands Are Unusual

Unusual demands stand out in several products. Tin plate users have overspecified contracts for both February and March and mills are running full. A record-breaking food pack for 1926 is indicated at this early date. Nut and bolt makers at Pittsburgh report January the best month in three or four years. Western makers quote small rivets higher.

Efforts of the automobile industry to break the 4.50c Pittsburgh price on full finished sheets have produced no tangible results as yet. At least 85 per cent of the mill capacity, it is reported, is holding firm and any concessions that have been made have not been important. Needs of the automobile plants are not pressing at present owing to reduced production but several builders have specified 4.50c tonnage in small amounts. Along with their drive for lower prices automobile companies are emphasizing their expectations of increased output which would mean a need of about 250,000 tons additional of sheets.

New car inquiries call for 2350 for the Illinois Central and 2000 to 3000 for the Seaboard Air Line. The only order of the week of importance was 500 for the Soo Line. Chicago mills have taken 23,000 tons covering recent car orders.

Sheet Wages Talked

The question of sheet mill wages is receiving the attention of producers. One large maker, it is reported, may increase day rate men by 10 per cent in the near future. If this becomes general it promises to complicate the mills' relations with the tonnage men in view of backward sheet prices.

Apart from sales of 15,000 tons of basic at Chicago and 15,000 tons of foundry for prompt delivery to larger buyers at New York, pig iron is quiet. Inquiries for second quarter are in-

creasing. Buffalo prices show a slightly easier tendency. A large eastern cast iron pipe maker is reported to have closed on a substantial tonnage of German iron.

Scrap prices have slipped again and are down 50 cents this week in practically all districts. Consumers are holding off.

Imports of 441,000 tons of pig iron gave 1925 the largest receipts of foreign iron and steel on record, 943,240 tons. In 1924, total imports were 556,733 tons.

IRON TRADE REVIEW composite of fourteen leading iron and steel products wavered again, falling to $39.01 against $39.15 a week ago.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Jan. 18, 1926	Dec. 1925	Oct. 1925	Jan. 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$22.76	22.76	21.46	24.56
Basic, valley	20.00	20.00	18.70	21.80
Basic, eastern del., eastern Pa.	22.50	23.00	20.50	24.25
*No. 2 foundry, del., Pittsburgh	22.26	22.26	20.96	23.91
No. 2 foundry, Chicago	23.00	23.00	21.60	23.80
*Southern, No. 2, Birmingham	23.00	21.60	19.50	20.00
*Southern Ohio, No. 2 Ironton	21.00	21.10	19.60	22.00
**No. 2X, Virginia furnace	23.25	23.30	23.00	24.50
**No. 2X, eastern, del. Phila.	24.26	24.26	22.61	25.61
Malleable, valley	20.50	20.50	19.20	22.20
Malleable, Chicago	23.00	23.00	21.60	23.80
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	21.76	21.76	20.46	23.66
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	9.50	4.00	5.65	4.10
Connellsville, foundry, ovens	7.00	5.10	5.95	5.10
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.60	35.00	39.20
Sheet bars, open-hearth, Pittsburgh	36.00	36.60	35.00	39.20
Billets, open-hearth, Pittsburgh	35.00	35.20	35.00	37.80
Wire rods, Pittsburgh	45.00	45.40	45.00	48.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.32	2.32	2.27	2.32
Iron bars, Philadelphia	2.22	2.22	2.12	2.28
Iron bars, Chicago, mill	2.00	2.00	1.90	2.00
Beams, Pittsburgh	1.90	1.95	1.90	2.10
Beams, Philadelphia	2.17	2.17	2.17	2.32
Beams, Chicago	2.10	2.10	2.10	2.20
Tank plates, Pittsburgh	1.85	1.90	1.80	2.00
Tank plates, Philadelphia	2.12	2.07	2.02	2.32
Tank plates, Chicago	2.10	2.10	2.10	2.20
Sheets, black, No. 28, Pittsburgh	3.35	3.35	3.10	3.55
Sheets, blue anl., No. 10, Pittsburgh	2.50	2.50	2.25	2.70
Sheets, galvanized, No. 28, Pittsburgh	4.60	4.60	4.25	4.75
Sheets, black, No. 28, Chicago	3.50	3.50	3.35	3.75
Sheets, blue anl. No. 10, Chicago	2.65	2.65	2.45	2.85
Sheets, galvanized, No. 28, Chicago	4.75	4.75	4.45	4.90
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago	2.70	2.70	2.70	3.00
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.50	19.00	18.40	22.10
Heavy melting steel, eastern Pa.	17.25	17.65	17.00	20.00
Heavy melting steel, Chicago	15.00	15.50	16.25	19.45
No. 1 wrought, eastern Pa.	18.25	18.75	18.75	21.50
No. 1 wrought, Chicago	15.00	15.40	16.30	19.15
Rails for rolling, Chicago	17.00	18.55	18.55	20.95

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Jan. 27, 1926)	$39.01
Last week (Jan. 20, 1926)	39.15
One month ago (December, 1925)	39.14
Three months ago (October, 1925)	37.61
One year ago (January, 1925)	41.02
Ten years ago (January, 1916)	33.66
Twelve years ago (January, 1914)	23.03

Late News Flashes

Orders Sale of Hydraulic Steel Co.

Cleveland, Jan. 26.—Sale on March 2 of the Hydraulic Steel Co. as a going concern was ordered today by Judge Westenhaver in federal court.

Approves Rail Steel Bars

Chicago, Jan. 26.—The Illinois highway department at Springfield, it is understood, has prepared new specifications for reinforcing bars which permit the use of rail steel bars for highway work for the first time in the history of the state. New specifications will be effective in February.

Plans Cleveland Cement Plant

Chicago, Jan. 26.—Plans are being prepared by the Universal Portland Cement Co. for the construction at Cleveland of a new plant with an annual capacity of 1,500,000 barrels annually. The plant will use 250,000 tons annually of slag from the Central furnaces of the American Steel & Wire Co.

Coke Forces Out Stacks

Pittsburgh, Jan. 26.—High coke prices and scarcity of fuel are causing some curtailment of blast furnace operation. The Jones & Laughlin Steel Corp, has blown out one of its Eliza group because of the prohibitive price of coke. The Struthers Furnace Co. stack has been banked pending an accumulation of coke. The Pittsburgh Crucible Steel Co. has banked one stack and the Clinton Iron & Steel Co. will become inactive Feb. 1.

Consider Reinforcing Bar Standards

Washington, Jan. 26.—No definite action was taken by the conference today of representatives of producers of reinforcing bar steel, consuming trades and engineers called to consider the adoption of specifications for any one grade of new billet steel bars for reinforcement. W. Chattin Wetherill, director of metals utilization bureau of the department of commerce, was authorized with the help of the industry, to name committee to investigate from standpoint of distributors and users, what grade or grades new billet reinforcements should be adopted. This committee is to report to similar conference Oct. 1 next. A sharp debate characterized discussion on the adoption of a single grade, representatives of rail steel bar industry opposing uniform specifications that would leave out of consideration, rail reinforcing steel.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00 to 36.00
Pittsburgh, bessemer	35.00 to 36.00
Youngstown	35.00 to 36.00
Philadelphia	40.30 to 41.30
Chicago	35.00
Forging, Pittsburgh	41.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh	36.00
Youngstown	36.00

SLABS

Pittsburgh	35.00 to 36.00
Youngstown	35.00 to 36.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅝-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.30; $7 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	1.96c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.85c to 1.90c
Philadelphia	2.12c
New York	2.14c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.00c to 2.10c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.32c to 2.42c
New York, soft steel	2.34c to 2.44c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.22c
New York, common iron	2.24c
Chicago, common iron	2.00c

Hoops, Bands Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c to 2.50c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass., Chicago	4.05c to 4.15c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.60c to 4.75c
3100 (Nickel chromium)	3.60c to 3.65c
6100 (Chrome vanadium)	4.40c to 4.50c
6100 (Chrome vanad. spring)	3.85c to 4.00c
9250 (Silico-mang. spring)	3.30c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar prices; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill g.t.	36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts	3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28. Pittsburgh base	3.35c
No. 28. Philadelphia, delivered	3.57c to 3.67c
No. 28. Gary, Indiana Harbor	3.45c
No. 28. Chicago delivered	3.50c

TIN MILL, BLACK

No. 28. Pittsburgh	3.35c
No. 28. Gary base	3.45c

GALVANIZED

No. 28. Pittsburgh base	4.60c
No. 28. Philadelphia, delivered	4.92c
No. 28. Gary, Indiana Harbor	4.70c
No. 28. Chicago, delivered	4.75c

BLUE ANNEALED

No. 10. Pittsburgh base	2.50c
No. 10. Philadelphia, delivered	2.82c
No. 10. Gary, Indiana Harbor	2.60c
No. 10. Chicago, delivered	2.65c

AUTOMOBILE SHEETS

No. 22. Pittsburgh base	4.50c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.85

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$52.20 to 53.70
Six-inch and over, Chicago	48.20 to 49.70
Four-inch, Birmingham	46.00 to 47.00
Six-inch and over, Birmingham	42.00 to 43.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list

Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger 75, 10 and 5 off

Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller 80, 10 and 5 off

Cold finished S. A. E. semifinished ⅝-inch and larger 75, 10, 10 and 5 off

Cold finished S. A. E. semifinished 9/16-inch and smaller 80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

Stove bolts, 80, 10 and 5 off plus 2½ off in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-inch and smaller Pittsburgh, Cleveland	70 and 10 off
**Rivets, 7/16 inch and smaller Chicago	70 and 10 to 70 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts. dist	6.25 off
Lock Washers, f.o.b. factory	85 off

Pig Iron

Inquiries for Second Quarter Increase, But Sales Are Slow—Prices Steady—Chicago Steelworks Buys Basic

PIG iron prices are firm, and exceptionally steady, considering developments in the coke market. While new demand has been fairly good, stocks at furnace yards low, and shipments high, prices have shown little deviation for several weeks, and furnace interests generally are willing to quote present prices on second quarter business. The increase in inquiries for the second quarter reflects buyers' needs, but a relatively small percentage of the tonnage on which prices are asked is being closed. This is probably because of uncertainties in regard to coke, though makers say an increase in iron ore is likely to offset an easier tendency that would develop with a settlement of the strike. A few additional furnaces have banked.

PITTSBURGH, Jan. 26.—The pig iron market is proceeding along the same lines followed for several weeks. The outstanding sale, No. 3, or gray forge iron, last Saturday involved 1000 tons at $20, valley. The buyer is located in central Pennsylvania. This demonstrates again that $20.50 is the firm minimum for No. 2 plain. Occasional small, filling-in sales are noted at that base. The technical position of most furnaces never was better, with low stocks and shipments high. All the iron made is going out. New demand for steelmaking iron is particularly dull. The Allegheny Steel Co., it is understood, did not take advantage of a low price recently offered on 1500 to 5000 tons of basic. The furnace making the offer through agents now is quoting $20, minimum, the same as other producers. Bessemer sales in single carloads are noted at $21, valley. The Struthers Furnace Co. has banked its stack, pending an accumulation of coke.

Boston, Jan. 26.—Increased interest in second quarter pig iron is shown by eastern foundries. Quotations are practically the same as for first quarter. In one or two cases slight concessions are offered for the latter delivery. Buffalo iron for prompt delivery is offered at $22, furnace, while second quarter is quoted at $21 or $25.91 delivered. Foreign iron here is firm at $22, on cars, for No. 2X (2.25 to 2.75 silicon). At Providence lower prices are named. Several hundred tons of eastern Pennsylvania iron were sold at $22.50 for No. 2X. Inquiry includes 300 tons for a western Massachusetts consumer, several hundred tons for a Vermont consumer, and several unstated tonnages for Connecticut.

Cleveland, Jan. 26.—Inquiries for pig iron for the second quarter are increasing, numerically, but the amounts wanted are not large, seldom over 1000 tons. Furnace interests with headquarters here during the week booked around 7000 tons for first and second quarters. The total amount covered by inquiries is about 10,000 tons. Several interests have contracts for practically all their first quarter output, and are not quoting except to their usual customers, for the remainder of this quarter. The two Cleveland furnace interests have some iron available for this period, but local demand is confined to a few carloads. Prices are firm at recently quoted levels. They do not appear to be influenced much by the coke situation, although coke has attained new peaks, with Connellsville fuel selling to the domestic trade in New York as high as $21 delivered. Some pig iron sellers with iron ore connections expect ore to advance $1 a ton. Current sales are noted at $23, lake furnace for delivery in western Ohio, Indiana and Michigan; $20.50, valley; $22, Cleveland furnace for local delivery, and $21 furnace for outside delivery.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$21.00
Bessemer, Pittsburgh	22.76
Basic, valley	20.00
Basic, Pittsburgh	21.76
Basic, Buffalo	20.00 to 20.50
Basic, del., eastern Pa.	22.50 to 23.00
Malleable, valley	20.50
Malleable, Pittsburgh	22.26
Malleable, del., Cleveland	22.26 to 22.50
Malleable, Chicago	23.00
Malleable, Buffalo	21.00 to 22.00
Malleable, del., eastern Pa.	24.25 to 24.75
No. IX, eastern del, Phila.	24.76 to 25.39
No. IX, Buffalo	22.50 to 23.50
No. 1 foundry, Chicago	23.50
No. 2 foundry, valley	20.50
No. 2 foundry, Pittsburgh	22.26
No. 2 foundry, Buffalo	21.00 to 22.00
No. 2 foundry, Chicago	23.00
No. 2 foundry, Granite City	23.50 to 24.00
No. 2 foundry, Ironton fur.	21.00
No. 2 foundry, del., Cleveland	22.26 to 22.50
No. 2 foundry, del., Phila.	23.76 to 24.39
No. 2 foundry, N. J., tidewater	23.89 to 24.76
No. 2X, eastern del., Phila.	24.26 to 24.89
No. 2X, east, N. J., tidewater	24.89 to 25.26
No. 2X, eastern del., Boston	26.65 to 27.15
No. 2X, foundry, Buffalo furnace	21.50 to 22.50
No. 2X, Buffalo, del., Boston	26.41 to 26.91
Continental foundry f.o.b. Boston	22.00 to 22.50
India, 2.25 to 2.75 silicon, delivered cars, Boston	22.50 to 23.00
No. 2 Alabama, Birmingham	22.00 to 23.00
No. 2 Alabama, Cincinnati	26.69
No. 2 Tenn., Birmingham	22.00
No. 2 Tenn., Cincinnati	25.69
No. 2 southern, Philadelphia	27.01 to 28.01
No. 2 southern, Chicago	27.01 to 28.01
No. 2 southern, Chicago (barge and rail)	25.18
No. 2 southern, Boston (rail and water)	27.91 to 28.91
No. 2 southern, Cleveland	27.01 to 28.01
No. 2 southern, St. Louis	25.42 to 26.42
No. 2X, Virginia, furnace	23.25
No. 2X, Virginia, Phila.	28.42
No. 2X, Virginia, Jersey City	28.79
No. 2X, Virginia, Boston	29.17
Gray forge, eastern Pa.	23.00 to 23.50
Gray forge, val. del. Pitts.	21.76
Low phos., standard, valley	28.00 to 28.50
Low phos., standard, Phila.	24.76 to 27.79
Low phos., Lebanon, furnace	24.00 to 25.00
*Low Phos., English	24.01 to 25.01
Charcoal, Birmingham	31.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $26.50; 6 per cent $27.50; 7 per cent $28.50; 8 per cent $29.50; 9 per cent $31.00; 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39; and 14 per cent $41.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $35.00; 11 per cent $37.00; 12 per cent $39.00; 13 per cent $41.00; 14 per cent $43.00; 15 per cent $45.00; 16 per cent $48.00; 17 per cent $50.50.

*Duty paid, delivered Philadelphia consumers.

Philadelphia, Jan. 26.—Several thousand tons of basic iron was sold last week at prices practically unchanged from the preceding week, although the market is somewhat easier. A fair volume of business continues to be done in foundry grades, all orders being for early shipment. The usual price is $23, base, eastern Pennsylvania furnace, with some sales at $22.50. Fully 1000 tons of Virginia foundry iron was sold in the past week. The price now is $22.75, base, furnace, plus 50-cent differentials. Foreign foundry iron is bringing $20.50 to $23, base, duty paid, tidewater.

Buffalo, Jan. 26.—New inquiry for pig iron is estimated at 5000 to 7500 tons. The largest single inquiry is for 2000 tons of foundry iron. Last week's sales included one of 2000 tons of malleable to New York Air Brake Co. Although some merchant interests are asking $22, base, for first quarter, others are quoting $21 for first and second quarter. Sixteen stacks now are in blast, the Bethlehem Steel Corp. having blown in a seventh of its nine furnaces at Lackawanna.

Birmingham, Ala., Jan. 25.—While pig iron sales have been light recently, melters are beginning to make inquiries for second quarter. Quotations are firm at $22 to $23, base. Shipments are about equal to production.

Cincinnati, Jan. 26.—Pig iron inquiries, particularly for second quarter, are increasing. The weak spots are less pronounced. Northern iron is firm at $21, Ironton, for first and second quarters. The Worthington Pump & Machinery Corp. is inquiring for 375 tons of northern and 75 tons of bessemer for Elmwood, O. The International Harvester Co., bought 800 tons of northern for Richmond, Ind. The Wickham Piano Plate Co., Springfield, O., bought another 500 tons of northern which brings its total purchases during the past two weeks to 2000 tons. Producers and

sellers are not interested in an inquiry for 1500 tons of northern for shipment during the second, third and fourth quarters. Sales of southern iron have been comparatively small. Alabama iron is quoted $23 and Tennessee at $22, Birmingham.

Chicago, Jan. 26.—Buying of northern pig iron in the past ten days has been picking up. A number of sales of 150 to 200 tons are reported, with the Milwaukee district more active than the Chicago or western Michigan automobile territory. The outstanding purchase is that of 15,000 tons of basic iron by the Inland Steel Co. from the Iroquois furnaces. The Racine, Wis., melter's inquiry for 1500 tons of foundry and malleable has not been closed and this interest has withdrawn its inquiry for 500 tons of silveries. Malleable and No. 2 foundry are unchanged at $23, Chicago furnace. The market on low phosphorus iron is being shaded and it is said that about $31, delivered Chicago, can be done. Charcoal iron selling is fair, with the market still $29.04, delivered Chicago. Eight of the 10 merchant stacks here are active.

St. Louis, Jan. 25.—More inquiries and a fair volume of sales of pig iron for prompt shipment are noted. The largest single inquiry is for 1000 to 1500 tons for a local machinery manufacturer for second quarter. Generally sentiment among buyers and sellers is cheerful. The melt is holding up, and since the second week of January has gone ahead of the December average. Prices continue strong, with offerings light. Furnace interests are not eager to quote for second quarter, and one important maker who had quoted for that delivery has withdrawn its prices. No. 2 southern is quoted $23, Birmingham, by most makers there, but small tonnages are obtainable at $22. Chicago is firm at $23. The leading local producer is asking $23.50 to $24, f.o.b. Granite City.

New York, Jan. 26.—About 1500 tons of pig iron was bought in this district in the past week. Buyers included the Crane Co., Worthington Pump & Machinery Corp., American Locomotive Co., and General Electric Co. All purchases were made for prompt delivery. A leading cast iron pipe company is reported to have purchased a substantial tonnage of German pig iron. Prices are slightly easier. Buffalo iron is $21, base, furnace, with some sales at less. Eastern Pennsylvania iron is $22.50 to $23. Foreign foundry iron is bringing $20.50 to $23, duty paid, tidewater. depending on the quality.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	34.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, per pound contained	1.14 to 1.16
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	122.50

†Duty paid

Ferroalloys

Large Users Covering Ferromanganese Requirements—Market Steady

Pittsburgh, Jan. 26.—Quiet negotiations have been under way for ferromanganese for the remainder of 1926, and it is understood a few of the larger users have arranged for most of their requirements. Many others continue to fill needs in the spot market. Present high coke prices would seem to preclude any reductions for the present. Several smaller users are contracting for second quarter, some taking English material at $115, seaboard base. Shipments are fairly heavy. This is true also of other alloys, including 50 per cent ferrosilicon. Spot sales of 10 to 12 per cent ferrosilicon are more numerous. Spiegeleisen users are well covered.

New York, Jan. 26.—It is becoming apparent that more ferromanganese requirements for 1926 have been covered as previously indicated. One domestic maker is reported to have an order book of fully 50,000 tons which embraces the needs of some companies for the entire year. Another maker has 10,000 tons in orders. While prices on these tonnages have varied the market now seems steady at $115 duty paid tidewater. Spiegeleisen sales are small but deliveries against contracts are good.

Coke

Prices Continue to Advance; Buyers More Reluctant—Car Shortage Felt in East

CONDITIONS approximating a famine prevail in the coke market for industrial users who are not adequately covered. The ordinary run of Connellsville blast furnace and foundry fuel continues to be diverted into channels paying $10 to $12 a ton; in some cases this coke being retailed in New York at $21. A mild form of car shortage was felt in the East.

Pittsburgh, Jan. 26.—Milder weather in the East, coupled with the possibility in today's coal strike conference, is slowing up beehive coke activity. Some eastern buyers who paid $11 to $12 this week, refuse to pay those prices this far in advance on next week's output. Producers are inclined to a day-to-day selling policy, knowing that should the conference bring an abrupt settlement considerable coke must be purchased before anthracite mines get into production. Deliveries were held up somewhat last week, particularly on the Pennsylvania railroad, due to car shortage. Many cars are tied up in the eastern region, some waiting for cargoes to be unloaded into barges at the seaboard. Blast furnaces are unable to pay the present high prices for 48-hour fuel. Other consumers pay $9.50 to $10 for run-of-oven coke. One sale of five cars was arranged at 25 cents below that minimum as an accommodation to a local user. Another sale last Saturday, 600 tons, brought $10, and another yesterday at the same figure involved 20 carloads. Theoretically foundry coke should be selling at $11, but $10 appears to be the maximum figure obtained this week. Some makers are selling occasional carloads to regular customers at $7 and $7.50.

Production of coke in the Connellsville region for the week ended Jan. 16 was 233,200 tons, compared with 229,780 tons the preceding week, according to the *Connellsville Courier*.

New York, Jan. 26.—Spot foundry coke is selling at $10 to $10.20, Connellsville. By-product foundry coke prices are unchanged.

Cincinnati, Jan. 26.—Heavy bookings of domestic coke by the Ashland By-Product Coke Co., Ashland, Ky., has resulted in that concern advancing prices. New schedules are egg and walnut $7 and No. 2 nut $6.50, ovens. The price of the foundry grade continues $8.50, ovens. Foundry fuel is moving better since foundries have resumed operations on a broader scale. Furnace coke is active, especially for heating purposes. Wise county foundry fuel is $6.50 to $7, and the furnace grade $6 to $6.50, ovens.

Coke Prices

Beehive, Ovens Prices per net ton	
Connellsville furnace	$9.50 to 10.00
Connellsville, foundry	7.00 to 10.00
New River foundry	7.00 to 8.00
New River furnace	6.00
Wise county furnace	6.00 to 6.50
Wise county foundry	6.50 to 7.00
Alabama foundry	5.75 to 6.00
Alabama furnace	5.50
By-Product	
Foundry, Newark, N. J.; del.	$11.01 to 11.52
Foundry, Chicago, ovens	10.50
Foundry, New England, del.	13.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.75 to 6.00
Foundry, Indianapolis, del.	11.25

Plates

Demand Largely Restricted to Car Plates—Prices Unchanged —Western Market Quiet

ORDERS for plates for cars have featured the week's business, which is on a relatively small scale. Awards at Chicago call for 23,000 tons of steel, mainly plates, and at Pittsburgh car orders placed and pending involve over 5000 tons of plates. Some Buffalo and Pittsburgh interests are competing in the Chicago territory. Pacific coast fabricators are inquiring.

PLATE PRICES, PAGE 284

Philadelphia, Jan. 26.—Eastern plate mills are operating at 75 per cent. New demand has increased somewhat, but is sufficient to maintain present operating schedules. Mills average about four weeks in making shipments. Pacific Coast inquiry has improved. Considerable tonnage will be required by the Baldwin Locomotive Works for 100 tenders booked for the Pennsylvania railroad recently. The market appears firm at 1.80c, Pittsburgh.

Pittsburgh, Jan. 26.—Additional barge and car awards have been made, and inquiries for cars now being worked on have been protected by additional lots of plates for as much as 5000 tons at a time. Plate specifications against contracts improved last week, and this week the improvement is keeping up. Some 1.85c and 1.80c, Pittsburgh, prices have been quoted in areas like Warren, Pa., Bradford, Pa., and elsewhere, meeting eastern Pennsylvania competition. In the Pittsburgh district proper, however, the Carnegie Steel Co., Jones & Laughlin Steel Corp., Bethlehem Steel Corp., Youngstown Sheet & Tube Co., and other important platemakers in nearby districts are adhering firmly to 1.90c, Pittsburgh.

Cleveland, Jan. 26.—January has remained a relatively quiet month in new tonnage as consumers appear to be well covered on all immediate needs. Some of the mills consequently are somewhat more aggressive for business and this is reflected by an easier condition of prices. While some of the mills are holding at 1.85c to 1.90c, Pittsburgh, 1.80c is not uncommon. The Louisville & Nashville railroad has placed its monthly requirements for 500 to 600 tons with southern makers. From 400 to 500 tons of plates for use in the fabrication of oil stills for Texas Oil Co. still remain pending.

Chicago, Jan. 26.—A Chicago maker has booked 23,000 tons of heavy finished steel, chiefly plates, for the 2308 freight and passenger cars placed here the past week. Pending oil storage tankage is light. The slowness with which western carriers buy cars is disturbing to the plate mills but hopes still are entertained for heavy awards this quarter. One Pittsburgh and one Buffalo maker of plates have invaded this territory and have matched Chicago delivered prices, but have not made inroads serious enough to warrant a change in the 2.10c, Chicago, level for plates.

CONTRACTS PLACED

Tonnage unstated, steel oil tanker for Gulf Refining Co., constructed at Camden, N. J. plant of American Brown Boveri Electric Corp.

4000 tons, twenty-five coal barges for the Carnegie Steel Co., for use on the Monongahela river, to the American Bridge Co.

700 tons, gas holder, Waukegan, Ill., to Bartlett-Hayward Co.

250 tons, plates and shapes, rebuilding steamer CHIPPEWA, at Lake Washington shipyards, Houghton, Seattle, to M. Barde & Sons.

100 tons, two tanks at Oswego, Oreg., to Pittsburgh-Des Moines Steel Co.

100 tons, standpipe, Gresham, Oreg., to Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

1000 tons, Soldiers' Memorial hall, Indianapolis; bids being taken.

300 tons, two dump scows for the United States engineers, Louisville, Ky., bids opened Jan. 19; Dubuque Boat & Boiler Works Co., low bidder.

The Gilbert & Barker Mfg. Co., West Springfield, Mass., will distribute to employes stock certificates amounting to more than $1,200,000, the result of a profit-sharing plan. The stock will be common shares of the Standard Oil Co. of New Jersey, with which the Gilbert & Barker company is allied.

Semifinished

Specifications Increase, While New Orders Are Lacking—Sheet Bars Quoted $36

SPECIFICATIONS on contracts for sheet bars, billets and slabs have increased in volume, but the market for new tonnage is quiet, as most users have covered. On a few small lots of billets and slabs $36, Pittsburgh, was obtained during the week, but the general level is $35, while sheet bars are available at $36, Pittsburgh or Youngstown. Wire rod shipments are heavy.

SEMIFINISHED STEEL PRICES, PAGE 284

Youngstown, O., Jan. 26.—No sales of semifinished steel have been made by valley producers since first quarter contracts were negotiated in December. At that time standard slabs and billets were closed at $35, Youngstown, and small billets and sheet bars at $36, Youngstown. These prices are still in effect, although no open tonnage is available because mill production is covered by contracts. Reports that a northern Ohio sheet maker recently purchased sheet bars from a producer in this district are unfounded. Sheet bar specifications are being released in good volume by district sheet makers who this week have 91 per cent of hot mill equipment scheduled.

Pittsburgh, Jan. 26.—Semifinished steel market activity revolves largely around specifications against contracts. Several steel producers here note improvement in the rate of specifying and this past week specifications have been brought practically up to date in a number of cases in sheet bars, billets and slabs. The price, $36 Pittsburgh, continues to represent the sheet bar market for open-hearth and bessemer steel. On 4 x 4-inch rerolling billets and equivalent slabs, $35 is nominal, although shipments are being made at that level. On some small sales arranged during the week involving 100 or 150 tons at a time, $36 Pittsburgh, has been obtained. On small billets $36 is the minimum and up to $38 is quoted. Forging billets still command $41, with no new business but plenty of material moving out on contracts. Wire rods are held at $45, and shipments are kept relatively high. Skelp is quoted at 1.90c, some contracts being worked upon at that level for domestic customers.

Cleveland, Jan. 26.—Leading consumers of sheet bars billets and slabs have covered their requirements for first quarter, and inquiries are lacking. No additional sales are reported by interests here. The market is nominally $36, Pittsburgh and Youngstown, on sheet bars, and $35 on billets and slabs. Higher prices contracts taken some weeks ago have been revised generally in line with the current market. The McKinney Steel Co. this week is operating seven of its 14 open hearths.

Philadelphia, Jan. 26.—Several orders for billets for current shipment were placed in the past week. Consumers show a disposition to refrain from contracting. The market is $35 to $36, base Pittsburgh, for rerolling quality, with some makers refusing to shade $36.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 15.00
Boston (dealers)	12.00 to 12.50
Buffalo	17.00 to 18.00
Buffalo, No. 1	18.50 to 19.00
Chicago	14.75 to 15.25
Cincinnati (dealers)	13.00 to 13.50
Cleveland	16.00 to 16.50
Detroit	14.75 to 15.25
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	17.00 to 17.50
New York (dealers)	12.00 to 12.50
Pittsburgh	18.50 to 19.00
St. Louis	15.00 to 15.50
Valleys	18.00 to 18.50

COMPRESSED SHEETS

Buffalo	17.00 to 17.50
Chicago	13.00 to 13.50
Cleveland	14.50 to 15.00
Detroit	12.50 to 13.00
Pittsburgh	17.00 to 17.50
Valleys	17.00 to 17.50

BUNDLED SHEETS

Buffalo	14.00 to 14.50
Cincinnati (dealers)	9.00 to 9.50
Cleveland	12.50 to 12.75
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	16.00 to 16.50
St. Louis	8.50 to 9.00
Valleys	15.25 to 15.75

SHEET CLIPPINGS, LOOSE

Chicago	9.50 to 10.00
Cincinnati	9.00 to 9.50
Detroit	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 15.00
Buffalo	18.25 to 18.75
Chicago	18.50 to 19.00
Cincinnati (dealers)	16.50 to 17.00
Cleveland (over 6 ft.)	16.75 to 17.00
Detroit	17.00 to 17.50
St. Louis	18.25 to 18.75

STOVE PLATE

Birmingham	14.00 to 15.00
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.25
Chicago	16.50 to 17.00
Cincinnati (dealers) (net)	9.50 to 10.00
Cleveland	13.75 to 14.00
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	19.75 to 20.25
Cincinnati (dealers)	17.50 to 18.00
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	24.00 to 24.50

SHOVELING STEEL

Chicago	14.75 to 15.25
Pittsburgh	15.00 to 15.50
St. Louis	15.00 to 15.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	17.75 to 18.25
Eastern Pennsylvania	20.50 to 21.50
Pittsburgh	21.00 to 21.50
St. Louis	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago (cut)	16.50 to 17.00
Eastern Pennsylvania	17.00 to 17.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	18.00 to 18.25
St. Louis	16.00 to 16.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	13.00 to 14.00
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	17.50 to 18.00
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	15.25 to 15.75
Cincinnati, No. 1 (dealers)	9.50 to 10.00
Cleveland, No. 1	13.75 to 14.25
Eastern Pennsylvania	18.00 to 18.50
New York, No. 1 (dealers)	15.75 to 16.25
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	18.50 to 19.00
St. Louis, No. 1	13.75 to 14.25
St. Louis, No. 2	15.00 to 15.50

WROUGHT PIPE

Boston (dealers)	11.00 to 11.50
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	12.50 to 12.75

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 17.50

BUSHELING

Buffalo	16.50 to 17.00
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1 (dealers)	10.00 to 10.50
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	13.50 to 14.00
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis, No. 1	13.00 to 13.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (chemical)	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	10.00 to 10.50
Cincinnati (dealers)	9.00 to 9.50
Cleveland	13.50 to 14.00
Detroit	10.50 to 11.00
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.50 to 11.00
Pittsburgh	14.50 to 15.00
St. Louis	8.75 to 9.25
Valleys	12.50 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	11.00 to 11.50
Boston (dealers)	9.00 to 9.50
Buffalo	14.00 to 14.50
Chicago	13.25 to 13.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	14.00 to 14.50
Detroit	11.00 to 11.50
Eastern Pennsylvania	14.00 to 14.50
Eastern Pennsylvania (chem.)	16.65 to 17.00
New York (dealers)	10.75 to 11.25
Pittsburgh	14.50 to 15.00
St. Louis	12.00 to 12.50
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.00 to 9.50
Buffalo	14.00 to 14.50
Cincinnati (dealers)	9.00 to 9.50
Cleveland	13.50 to 14.00
Detroit	11.25 to 11.75
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	10.75 to 11.25
Pittsburgh	15.00 to 15.50

PIPES AND FLUES

Chicago	12.75 to 13.25
Cincinnati (dealers)	8.00 to 8.50
Cleveland	12.25 to 12.50
St. Louis	11.50 to 12.00

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	15.00 to 15.50
Cleveland	13.75 to 14.00
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	12.00 to 12.50
St. Louis	13.50 to 14.00

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	10.00 to 10.50
Cleveland (under 10 in.)	14.25 to 14.50
Cleveland (over 10 in.)	14.25 to 14.50
Detroit	10.75 to 11.25
Pittsburgh	15.00 to 15.50

FORGE SCRAP

Boston (dealers)	10.00 to 10.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	15.00 to 15.50

ARCH BARS AND TRANSOMS

Chicago	23.50 to 24.00
St. Louis	21.50 to 22.00

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	15.00 to 15.50
Chicago	14.50 to 15.00
Cleveland	14.50 to 15.00
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh	17.00 to 17.50
St. Louis	12.00 to 12.50

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Boston (shipping point)	18.00 to 19.00
Buffalo	20.00 to 20.50
Chicago	19.50 to 20.00
Cleveland	18.00 to 18.50
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	22.50 to 23.00
St. Louis	19.50 to 20.00

SHAFTING

Boston (shipping point)	18.00 to 18.50
Chicago	20.75 to 21.25
Eastern Pennsylvania	23.00 to 23.50
New York (dealers)	18.50 to 19.50
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo, iron	17.00 to 17.50
Buffalo, steel	19.00 to 19.50
Chicago, iron	18.00 to 18.50
Chicago, steel	19.00 to 19.50
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	18.00 to 18.50
New York iron (dealers)	15.00 to 15.50
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	17.25 to 17.75
St. Louis steel	18.50 to 19.00

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 18.00
Boston	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	19.00 to 19.50
Chicago No. 1 railroad or agricultural	18.00 to 18.50
Cincinnati No. 1 Machinery cupola (net tons dealers)	17.50 to 18.00
Cleveland, cupola	17.50 to 18.00
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.00 to 17.50
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	16.50 to 17.00
St. Louis, agricultural	16.25 to 16.75
St. Louis, machinery	18.50 to 19.00
Valleys	18.00 to 18.50

HEAVY CAST

Boston	17.50 to 18.00
Buffalo (breakable)	16.50 to 17.00
Cleveland	13.00 to 13.50
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	16.50 to 17.00

MALLEABLE

Boston, railroad	19.50 to 20.00
Buffalo	20.00 to 20.50
Chicago, agricultural	16.50 to 17.00
Chicago, railroad	17.75 to 18.25
Cincinnati, railroad (dealers)	14.50 to 15.00
Cincinnati, agricultural (dealers)	16.00 to 16.50
Cleveland, agricultural	18.50 to 18.75
Cleveland, railroad	18.00 to 18.50
Detroit	15.50 to 16.00
Eastern Pennsylvania, railroad	17.00
Pittsburgh, railroad	19.50 to 20.00
St. Louis, agricultural	14.50 to 15.00
St. Louis railroad	16.00 to 16.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.50 to 18.00
Boston (dealers)	13.50 to 14.00
Buffalo	18.00 to 18.50
Chicago	17.00 to 17.50
Cleveland	17.25 to 17.50
Eastern Pennsylvania	18.50 to 19.00
New York	15.50 to 16.00
Pittsburgh district	19.50 to 20.00
St. Louis	17.50 to 18.00

LOCOMOTIVE TIRES

Chicago, No. 1	18.00 to 18.50
Chicago, cut	18.75 to 19.25
St. Louis, No. 1	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	17.00 to 17.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.00 to 21.50

Scrap

Lack of Buying Depresses Prices and Material Is Accumulating Heavily

A DECLINE of at least 50 cents has been made in iron and steel scrap and further lowering of price is expected since consumers exhibit little interest and confine buying to odd lots. Dealers are unwilling to contract to deliver tonnages at present market values showing faith in future prices. Railroads and industrial producers have much material, a drag on the market.

Chicago, Jan. 26.—Iron and steel scrap continues to work down slowly, and as yet no evidence of strength can be discerned. Bids for railroad material and small day-to-day sales as a rule do not give hint of an immediate change. One selling interest believes the market will settle 50 cents a ton and not recover for 60 days. The leading consumer of heavy melting steel is taking in less material and is not buying. This grade has lost 25 cents on the minimum of the former spread and is now quoted at $14.75 to $15.25. A slight easing off in demand for cast borings is noticeable. Rerolling rails are in oversupply and are now quoted at $17 to $17.50. The foundries, especially gray iron, are taking in more scrap. Despite the cheapness of steel scrap, steelmakers appear to be using a greater proportion of pig iron.

Boston, Jan. 26.—The advance started a week ago has been halted by low prices for heavy melting steel paid in Pennsylvania, and heavier accumulations at New England manufacturing plants. Sales of the past week show a slight decline at Boston. One dealer reports several hundred tons of No. 1 cast sold at $19.50 delivered.

New York, Jan. 26.—The brisk trading in scrap earlier in the month has disappeared and buying is listless with one or two grades down 50 cents a ton. Yard steel, following the 50-cent decline in railroad steel last week, has fallen off to $12 to $12.50, New York.

Philadelphia, Jan. 26.—Trading between dealers continues the principal feature of the market in iron and steel scrap. Consumers bought only scattered tonnages the past week.

Buffalo, Jan. 26.—Scrap prices are holding fairly steady in spite of lack of demand. Dealers say their stocks have not been replenished to usual January proportions and that material is scarce. Reports are that one melter offers only $17 for heavy melting steel and is getting odd lots although dealers' ideas of values are considerably higher and no tonnage has moved at this price.

Pittsburgh, Jan. 26.—Lack of interest on the part of consumers of various grades of scrap is bringing about weakness in price. Several grades, including compressed and bundled sheets, are down 50 cents from a week ago. Most sales are for unimportant tonnages. Heavy melting steel is quotable at $18.50 to $19, the same as last week, with no takers. Some local mills would buy large lots if they could get them at $18 or $18.25 but dealers will not take on large orders at those figures.

Cleveland, Jan. 26.—Movement of iron and steel scrap outside of contract shipment continues extremely light in this district. Consumers are taking no interest in offerings although shipments for the most part are being received without interruption. Occasional spot sales are made but future buying is absent. With transactions of importance lacking, prices are largely nominal.

Cincinnati, Jan. 26.—With consumers refusing to interest themselves in new purchases and dealers' yards clogged the iron and steel scrap market here is dull, weak and featureless. Consumers with contracts are holding up shipments. The Wheeling Steel Corp., Portsmouth, O., has taken virtually no tonnage for ten days. Prices are nominal.

Detroit, Jan. 26.—General conditions in iron and steel scrap remain unchanged. Many large consumers are showing more interest. In spite of dull demand dealers are not inclined to dispose of stocks below market quotations.

St. Louis, Jan. 25.—Except in a small way users are not buying iron and steel scrap and the market is quiet and featureless. While mills and foundries have good orders on books, specifications are slow, and there is a general disposition to postpone purchasing raw materials. Some consumers are well stocked with scrap and announce they will not require further tonnage during this quarter.

Birmingham, Jan. 25.—Heavy melting steel continues at $14 and other grades are unchanged from the level of several weeks. Consumers are buying only for necessities and no contracts are being placed for future delivery.

Sheets

Easier Tone Noted in Market—High Operations Sustained—Demand Quieter

WHILE valley sheet mill operations are holding up to 91 per cent, backlogs have been greatly reduced, and schedules are on a day to day basis. An easier tone is evident, and fourth quarter prices have applied on some shipments to distant competitive points. An increasing demand for blue annealed and galvanized is noted at Pittsburgh.

SHEET PRICES, PAGE 284

Pittsburgh, Jan. 26.—Improved specifications against contracts, new orders and increased shipments are some of the highlights of the sheet market. The automotive industry, however, has not come forward with purchases as expected. Automobile companies are planning increases in output of 25 to 65 per cent, and if only the 25 per cent increase is realized the high-finished sheet mill capacity will be called upon to supply about 250,000 tons more, and to bring in the necessary additional full finishing mills will require at least 12 months. Makers of full finished sheet representing 85 per cent or more of the present capacity are maintaining the 4.50c price. Some makers of automotive parts have paid within the past week or two 4.50c to obtain quality sheets, although they had taken their orders on an unprotected basis of 4.25c. Demand for black sheets has increased, orders for 500 tons or more being taken. Additional blue annealed sheet business has been placed, one order exceeding 3000 tons. The aggregate of galvanized sheet tonnage placed each week is large. Prices on these three grades are firm on the quoted bases. Orders received by the American Sheet & Tin Plate Co. during the past week or more were about equal to capacity. The company's operations average 85 per cent in a week's time, although on certain days it operates at 93 per cent of sheetmaking capacity. The general average for the industry is 80 to 85 per cent. Additional car awards have increased demand for galvanized and blue annealed sheets. Some large blue annealed tonnage is now under negotiation and makers are encountering competition from platemakers which brings out a figure of 2.30c on a 1.80c Pittsburgh plate base, against the regular 2.50c blue annealed price.

Boston, Jan. 26.—Sheet demand is strong. Prices are exceptionally firm. One eastern mill when offered a round tonnage of black sheets for February reported March to be its earliest delivery date.

Philadelphia, Jan. 26.—Sheet specifications are slower, but sufficient to

maintain production. The price situation is easier. Substantial orders have been placed at concessions, particularly for black sheets.

Youngstown, O., Jan. 26.—Backlogs of sheets have been reduced to the point where most producers are enabled to schedule specifications a few days after they are received. The situation is much easier from the standpoint of unfilled tonnage than in December. Prices are holding remarkably well in view of the tendency toward quiet conditions. Blue annealed is quoted at 2.50c, black at 3.35c and galvanized at 4.60c. In a few instances, particularly in the eastern and southern districts, fourth quarter prices have applied, but as far as can be determined this is not general. High-grade tonnage still commands 4.50c and while several large consumers have delayed purchasing, little weakening in the price structure is apparent. Rumors of fourth quarter prices applying on new placements are heard, but lack verification. Many of the large consumers of automobile sheets specified in good volume this week on the basis of 4.50c, with the revised clause applying on the disposition of seconds. Metal furniture producers are tendering good orders.

Chicago, Jan. 26.—Specifications for steel sheets continue to come in slowly but makers claim that present levels of 4.75c, delivered Chicago, for galvanized, 2.65c for blue annealed and 3.50c for black are not in danger.

St. Louis, Jan. 26.—Specifications also have gained in volume, and some difficulty is being experienced in keeping up on shipments. Reports of small premiums for prompt shipments of galvanized sheets were made by several sellers. The leading local producer is operating full time.

Tin Plate

Consumers Over-Specifying—Mills Operating at Capacity

TIN PLATE PRICES, PAGE 284

Pittsburgh, Jan. 26.—Customers of tin plate makers have over-specified for February and already are over-specifying for March. This is making it possible for producers to continue to operate full. The American Sheet & Tin Plate Co. is operating 89 per cent of tin mill capacity, but the rate would be much higher with the elimination of three obsolete plants. One of these may be forced into operation if the present demand keeps up. Four tin mills at its National works are idle due to lack of power. The McKeesport Tin Plate Co. runs all 44 of its mills, and the Jones & Laughlin Steel Corp. and other makers are running practically full. After the largest food pack of its history in 1925, the California Packers' association reports the lowest inventory of canned goods on Jan. 1 this year that it ever has had. The outlook is for a record-breaking pack in 1926, breaking tin plate production records. The market price still is $5.50 per base box.

Strip Steel

Heavy Demand Will Bring Operation to High Point—Prices Firm

STRIP PRICES, PAGE 284

Pittsburgh, Jan. 26.—Strip steel making, now on a 75 to 80 per cent average basis, is due for a further increase within the next month. Incoming orders are on the rise and requests for expedited shipments are more numerous. Automotive demand still is in the background but general consuming lines are more active. Shipments for this month will undoubtedly be greater than in December although they will not come up to October, the largest month of last year for strip makers in this locality. Prices still remain unchanged but firm, 3.90c for cold and 2.30c for hot.

Pipe

Mills Soon to Increase Operations—Buyer Places 10,000 Tons Cast Pipe in Philadelphia

INCREASING buying by jobbers for spring stocks is expected to cause a gain soon in pipe mill operations, which now are 65 to 75 per cent of capacity. United Gas Improvement Co., New York, has divided 10,000 tons among three American and one French makers. A 3000-ton lot at Milwaukee was bid under the market level, and the maximum spread was dropped 50 cents a ton.

PIPE PRICES, PAGE 284 AND 322

Pittsburgh, Jan. 26.—Pipe mills, while averaging 65 to 75 per cent at present, will shortly have to increase operations. Orders are more numerous and jobbers are beginning to line up their spring stocks. They continue spot buying however, for the reason that prompt deliveries still are available. Building programs for 1926 are being lined up on the basis of an increase of 25 per cent or more over 1925, and this is important from the standpoint of pipe manufacture.

Oil country goods demand is improving but betterment largely is prospective. Extensive drilling programs are being mapped out and only against a portion of this has the tubular goods been lined up. Each week sees a fair tonnage written up on order books but shipments are high, January shipments being on a larger scale than December's.

New York, Jan. 26.—Cast pipe demand still is confined chiefly to private companies. A recent large contract involves approximately 10,000 tons for the United States Gas Improvement Co., Philadelphia, the business being distributed among three American producers and a French maker. The situation generally continues strong with prices unchanged. The majority of shops are booked up to March and in some instances beyond on the smaller sizes.

Chicago, Jan. 26.—On 3000 tons of 6 to 16-inch cast iron pipe at Milwaukee the low bid was slightly under $40, Birmingham. The market as a whole on pipe 6-inch and over is now $40 to $41.50, Birmingham, or $48.20 to $49.70, delivered Chicago, which is a drop of 50 cents a ton in the top of this spread. Makers are booked at least two weeks further ahead than last year, while business is priced a trifle higher than in 1925. The National Cast Iron Pipe Co. has taken considerable business recently, including 2550 tons at Dearborn, Mich., 1800 tons at Downers Grove, Ill., and 800 tons at Kenosha, Wis.

Birmingham, Ala., Jan. 25.—Slight easing up of awards has not disturbed cast iron pressure pipe production and shipment. Winter buying has been up to expectations. Several jobs are expected which will involve large tonnages of pipe. Soil pipe and fittings trade is showing slight improvement and stock is coming from warehouses.

Boston, Jan. 26.—Cast pipe demand is active in New England. Boston is in the market for 2500 tons of 8 to 36-inch and 200 tons of fittings. Heavy private buying is being transacted. Prices are firm.

CONTRACTS PLACED

10,000 tons, the United Gas Improvement Co., Philadelphia, to the United States Cast Iron Pipe & Foundry Co., the American Cast Iron Pipe Co., Glamorgan Pipe & Foundry Co., and B. Nicoll & Co., the latter representing French makers.

3000 tons, Dearborn, Mich., of which 2550 tons went to National Cast Iron Pipe Co. and 500 tons to United States Cast Iron Pipe & Foundry Co.

1800 tons, Downers Grove, Ill., to National Cast Iron Pipe Co.

300 tons, pipe line for Carmichael, Calif., to Sacramento Pipe Works.

800 tons, Kenosha, Wis., to National Cast Iron Pipe Co.

350 tons, 8-inch class B for local improvements, Seattle, to United States Cast Iron Pipe & Foundry Co.

125 tons, 6 and 8-inch line for Tacoma, Wash., to United States Cast Iron Pipe & Foundry Co.

CONTRACTS PENDING

3000 tons, 6 to 16-inch water pipe for Milwaukee; Glamorgan Pipe & Foundry Co., low at $47.40 per ton. Other bidders included United States Cast Iron Pipe & Foundry Co., $47.50; James B. Clow & Sons, $49.50; National Cast Iron Pipe Co., $50 on all but 16-inch; American Cast Iron Pipe Co., $50.50.

2500 tons, 8 to 36-inch pipe and 200 tons of fittings, Boston; bids in.

500 tons, pipe for Oswego, Oreg.; bids under consideration.
250 tons, 8 to 12-inch, Malden, Mass; bids in.
200 tons, 6 to 16-inch pipe, Jersey City, N. J.; bids close Jan. 28.
200 tons, 6 to 12-inch, for Northampton, Mass.; bids close Feb. 1.

Bolts, Nuts, Rivets

Western Prices on Bolts Are Higher—Shading on Rivets

NUT AND BOLT PRICES, PAGE 284

Chicago, Jan. 26.—Makers of bolts, nuts and rivets display a tendency to quote higher prices on small rivets, the latter ranging from 70 and 10 to 70 and 5 off. Specifications are slowly improving, though several large implement makers specified so heavily in December they have not been in the market this month. Bolts and nuts are quoted on the basis of 50, 10 and 10 off for large machine bolts.

Philadelphia, Jan. 26.—Bolt specifications are quieter after heavy ordering but mill schedules are good. Rivet buying is fair with prices 2.50c to 2.60c, Pittsburgh.

Pittsburgh, Jan. 26.—Orders received by nut, bolt and rivet producers here today and yesterday, and for two or three days late last week indicate that January will be the best month in the past three or four years. These orders have come from the larger consumers. Nut and bolt makers are operating at 70 per cent and active rivet producers are on the same basis. One or two have not operated for several months. Rivets have again been subjected to some shading and 2.50c to 2.60c now is considered the quotable market. Some continue to ship uninterruptedly against 2.60c contracts. Small rivets are quoted at 70 and 10 off although western manufacturers are able to obtain as high as 70 and 5 off.

Close First Half Cinder, Scale Contracts

Philadelphia, Jan. 26.—Cinder scale contracts for first half have been closed. Cinder in eastern Pennsylvania is about the same as for the last half, namely $3.35 to $3.60, a gross ton, delivered. In central Pennsylvania the price is lower, $2.75 to $3.25. Scale in eastern Pennsylvania is higher, $6.25 to $6.75. In central Pennsylvania the price is $6 to $6.25.

McKinney Pays Dividend

Directors of the McKinney Steel Co., Cleveland, have declared dividends totaling $1,200,000 for 1926, payable quarterly. The McKinney Steel Holding Co., controls 53¾ per cent of the steel company's stock and its share of the dividend will be $645,000. The dividend requirement on the $7,250,000 of 6 per cent preferred stock of the holding company is $435,000. Earnings of McKinney Steel Co., are not made public by the management, but it is understood they exceeded $2,200,000 in 1925.

Bars

Heavy Tonnages Continue to Be Specified—Some Eastern Competition Exists in West

DEMAND for steel bars continues strong and all producers have excellent books, with Chicago producers talking an increase. However, some eastern makers have invaded Chicago territory with shaded prices. This has halted thoughts of higher prices there. January promises to exceed November, the best month last year, in tonnage. For the most part prices are firm.

BAR PRICES, PAGE 284

Chicago, Jan. 26.—The finished steel situation presents two distinct pictures. On the one hand are the Chicago mills operating at 88 per cent, booking slightly more than they are shipping, specifications above the January average and one producer talking of an advance for second quarter. On the other hand Pittsburgh mills, anxious for business, are edging into Chicago territory. One Pittsburgh interest has been quoting Chicago mill delivered prices in Chicago proper. At Milwaukee an eastern maker has underbid a Chicago competitor 20 cents a ton. As yet, these forays are not known to have produced any business. In neutral territory, south and southeast of Chicago, Pittsburgh mills have been drawing in closer. The effect has been to militate against the 2.10c, Chicago, level although no shading is reported. One interest believes that any chance of higher second quarter prices has been dissipated for the present. Consumptive conditions, especially in the automotive and implement industries, look better.

Both rail steel and bar iron are unchanged at 2.00c, Chicago, with order books better than new business the past few days would indicate.

Boston, Jan. 26.—Steel bars hold firm at 2.00c Pittsburgh or 2.365c delivered. The total tonnage placed at Boston during the week approximates the tonnage of a week ago, but the number of buyers has nearly doubled.

Pittsburgh, Jan. 26.—Specifications on merchant steel bar contracts are showing a gratifying increase for the past week. Already January is ahead of all of December and promises to exceed November, which at 5 or 6 per cent larger than December was the largest month of last year. Incoming business is very diversified. Jobbers too, are ordering in material, but continue to buy only as needed. The price is 2.00c, with occasional small sales made at 2.10c. Bar making in this locality is practically on a 100 per cent basis.

Cleveland, Jan. 26.—Tonnage is coming through surprisingly well against former commitments and in the aggregate is even better than December. New business, however, is light. Although automobile plants have sharply reduced production schedules they apparently have not checked down orders for parts since plants of this character in this district continue to run at high rate. A recent check of operations of a wide range of manufacturing plants which are principal consumers of bars shows an average activity of 85 per cent or better. The Willys-Overland plant which has been producing 1200 to 1300 cars a day has cut its operations more than half. Reports from Detroit state the Ford Motor Co. is running four days a week at 7000 cars daily. Bar prices are well maintained at 2.19c Cleveland and 2.00c Pittsburgh.

Cold Finished Steel

Lack of Automotive Buying Felt Though Activity is Increasing

Pittsburgh, Jan. 26. — Dependent largely upon the automotive industry for its tonnage, the cold finished bar industry still lags. Makers claim there is nothing discouraging in the situation and are confident concerning the first quarter as a whole. The past week has shown an improvement over the preceding two, and the present week starts out well. Due to cautious and conservative buying, average operations do not exceed 65 or 70 per cent. Shipments are high, comparing favorably with December, and may exceed that month. The price of 2.50c still is firm.

Hoops and Bands

Production High and Current Demand Keeps Schedules Full

HOOP PRICES, PAGE 284

Pittsburgh, Jan. 26.—Hoop and band production is at 100 per cent. They do not have as much business ahead as two months ago but day-to-day demand continues good from stamping companies and from building construction. The price still is 2.50c.

Security Trust Co. Detroit, has been appointed receiver for the Unique Brass Mfg. Co., that city, in a friendly receivership proceeding. The company is said to be embarrassed by lack of working capital. It has liabilities of $217,000 and assets of $400,000. The plant will continue at maximum production under the receivership.

Structural Shapes

Buying Fails to Develop Strength as Awards Continue Slow—Inquiries Heavier —Pittsburgh Competes in Chicago District

FAILURE of fabricators and manufacturers to recover promptly from the inventory lull of the first half of January has deadened the structural market somewhat. New York sellers claim January to be the lightest month in a long time. Chicago interests are finding an unusually heavy volume of business. Inquiries are plentiful but many are in the financing stage and are purely speculative as to maturity. Large awards were lacking last week, and no new inquiries of size appeared.

Price developments are featured by Pittsburgh mills entering into competition with Chicago makers in the latter district. Plain material prices are unchanged and fabricated quotations are strengthening.

STRUCTURAL SHAPE PRICES, PAGE 284

New York, Jan. 26.—Structural buying continues to slacken. While considerable work is being figured, relatively few orders are being placed. The month now closing has been perhaps one of the slowest from the standpoint of business booked in some time. Plain material is quoted around 1.90c Pittsburgh.

The transportation board of New York plans expenditure of one hundred to one hundred fifty million dollars on subway work during 1926.

Boston, Jan. 26.—Buying of structural material is light and awards have been mostly under 100 tons. New work continues to develop along generous lines. Prices of plain material range from 1.90c to 2.00c Pittsburgh.

Philadelphia, Jan. 26.—Structural awards are quiet but numerous projects are pending. Prices are unchanged, usually 1.90c to 2.00c Pittsburgh or 1.90c to 2.05c, eastern mill being quoted. Attractive orders find these prices shaded.

Pittsburgh, Jan. 26.—Weekly structural shape awards in this vicinity are large but individual orders as a rule are for 10 to 25 tons. Shops do not have much ahead but keep operating at a fairly high rate. Inquiries are numerous and estimating departments are busy. The general trend seems to be to get away from some of the low prices recently uncovered such as $63 or $65 per ton, fabricated and delivered to the job. Plain material is quoted at 1.90c to 2.00c, with some mills making a decided effort to get way from the minimum but being only partially successful.

Cleveland, Jan. 26.—Structural activity is centered around the Union terminal project, bids now being taken on 17,000 to 18,000 tons for the tower building, 1000 to 1500 tons for the Eagle street bridge, and several hundred tons for the Columbus road bridge. Small lots constitute awards. Plain material prices are steady at 2.09c to 2.19c Cleveland. Fabricated quotations still fluctuate widely. Railroad elevation work at Erie, Pa., has taken 2800 tons.

Chicago, Jan. 26.—The price situation in beams has become somewhat disturbed, for one reason because of the reaching out by Pittsburgh mills for business in this district. As a result fabricators are keeping their stocks down, although having much tonnage for spring delivery on their books. For the season both awards and pending business in structurals are heavy. The Chicago mill quotation on plain material is 2.10c.

Awards Compared

	Tons
Awards this week	22,825
Awards last week	17,396
Awards two weeks ago	40,021
Awards this week in 1925	34,541
Average weekly awards, Dec.	26,219
Average weekly awards, 1926	21,056

CONTRACTS PLACED

6640 tons, city hall, Los Angeles, to McClintic-Marshall Co. of California.

5000 tons, subway section No. 3, route 103, New York, tentatively placed through Rosoff Subway Construction Co. to an unnamed fabricator.

2800 tons, track elevation work for New York Central railroad, Erie, Pa., to the Mount Vernon Bridge Co.

2650 tons, approximately, are involved in the following six contracts:

Office, 1-3 East Forty-second street, New York, to Post & McCord Inc.

Storehouse for the New York Edison Co., New York, to Post & McCord Inc.

4-story loft at the corner of Varick and Charlton streets, New York, to Hay Foundry & Iron Works.

18-story office building, 25-foot frontage, 113 West Forty-seventh street, New York, to the Dwyer Iron Works.

Church and parsonage, Richmond Hill, Long Island to Reiche & Pennar Inc.

Storehouse for the Tromner brewery, Bushdick avenue, Brooklyn, N. Y., to Reiche & Pennar Inc.

1200 tons, sheet mill building, Weirton Steel Co., Weirton, W. Va., to the McClintic-Marshall Co. This is in addition to tonnage recently placed for its new open-hearth buildings.

800 tons, museum of natural sciences, Buffalo, N. Y., to Buffalo Structural Steel Co.

700 tons, Arthur Brisbane apartment, 22 East Fifty-seventh street, New York, reported placed with the American Bridge Co.; Fred T. Ley & Co. Inc., 19 West Forty-fourth street, general contractor.

800 tons, buildings for United Verde Copper Co., Clarkdale, Ariz., to McClintic-Marshall Co.

550 tons, Hawaiian Electric building, Honolulu, T. H., to California Steel Co.

500 tons, steel frame for transit shed berth for Los Angeles harbor department, to Virginia Bridge & Iron Co.

400 tons, coal handling bridge for Mead-Morrison Mfg. Co., Chicago, to Milwaukee Bridge Co.

300 tons, service building for Commonwealth Edison Co., Chicago, to Vierling Steel Works.

200 tons, Garfield school, Oakland, Calif., to Herrick Iron Works.

200 tons, plant for the Wilkinsburg Ice Co., Wilkinsburg, Pa., to the McClintic-Marshall Co.

175 tons, bridge at Denison, Tex., for Kansas, Oklahoma & Gulf railroad, to Wisconsin Bridge & Iron Co.

175 tons, First Congregational church, Evanston, Ill., to unstated fabricator.

150 tons, Bickford theater, Buffalo, N. Y., to Buffalo Structural Steel Co.

135 tons, school at Roxbury, Mass., to Boston Bridge Co.

CONTRACTS PENDING

5950 tons, subway section No. 2, route 102, New York; G. H. Flynn low on general contract.

3000 tons, highway bridge, Mobile, Ala., bids being taken.

2800 tons, addition to Roanoke building, Chicago; plans by Holabird & Roche, 104 South Michignn avenue, Chicago.

1650 tons, subway, section 8, route 78, New York; bids asked.

1500 tons, extensions to Libbey-Owens Glass Co. plant, Charleston, W. Va., taking of bids deferred to February.

1500 tons, apartments, Eastern Parkway and Underhill, Brooklyn, N. Y.; pending.

1200 tons, 21-story Weitzner building, Twenty-eighth street and Fifth avenue, New York; award expected shortly.

1000 tons, Ford assembly building, Montevideo, Uruguay, South America, bids in. Stone & Webster Corp., Boston, engineers.

1000 to 1500 tons, Eagle street bridge, Cleveland; bids in Feb. 1.

850 tons, Silverman apartment, University place, New York; pending.

850 tons, highway bridge over the Rapahanock river, Virginia; bids asked.

800 tons, 12-story Silverman apartment, University place, New York; bids asked.

800 tons, 15-story Joseph Seigel apartment, 17-25 West Thirty-sixth street, New York; bids asked.

800 tons, 16-story Walton Hall apartment, 325 East Seventy-second street, New York; pending. Arthur C. Holden is architect.

700 tons, bridge, Catlettsburg, Ky.; bids being taken.

600 tons, 14-story apartment at 820 Park avenue for the H. R. H. Construction Co., 110 West Fortieth street, New York; bids asked.

500 tons, 7-story factory building for the Hilo Varnish Co., 443 March avenue, Brooklyn, N. Y.; bids asked.

500 tons, addition to Crane Co., Chicago; pending.

500 tons, Weitzner loft, 252 West Thirtieth street, New York; pending.

500 tons, Weitzner loft, 13 West Thirtieth street, New York; pending.

400 tons, West Penn hospital laboratory building, Pittsburgh; second call for bids opens Feb. 8.

400 tons, building in Penn avenue, near Seventh street, replacing one destroyed by fire last year, Sharove & Friedman, Pittsburgh, architect; bids being taken.

350 tons, Catholic boys' high school, Pittsburgh; Homestead Iron Works low bidder.

350 tons, Coplin theater and store building, Buffalo, N. Y.; contract pending.
200 tons, sewage disposal plant, Akron, O.; pending.
200 tons, garage for Joseph Kenny, Southside, Pittsburgh; general contract awarded Keystone Engineering Co.
250 tons, addition for the Chester Lace Mills, Chester, Pa.; bids asked.
170 tons, Wilson junior high school, Cleveland; Schirmer O'Hara Co. awarded general contract.
100 tons, structural steel and metal reinforcement for 90-foot steel spans on federal aid project No. 9-E, Lewiston, Idaho; bids in Jan. 30 by state commissioner of public works.
100 tons, parochial school, Laurel Hill, Long Island, N. Y.; pending.
Tonnage unstated, 26-story Midland club, Chicago. Peter J. Angsten, 11 South LaSalle street, Chicago, president. Plans shortly by K.M. Vitzthum & Co., 307 North Michigan avenue, Chicago.

Iron Ore

Year's Shipments To Surpass 1925, Some Producers Forecast

IRON ORE PRICES, PAGE 317

Cleveland, Jan. 26.—Iron ore producers with large associated consuming interests, some of which have forecast their needs, are predicting shipments in 1926 will exceed those of 1925, which amounted to 55,549,000. Some thought has been given to requirements; but there is no demand in the open market such as would develop a price at this time. The bright outlook for tonnage needs this year is one factor promoting a stronger feeling in respect to prices. Stocks at lower lake ports, and most furnaces, will be lower May 1 than on the "opening date" last year. Those at lake ports probably will be below normal, shippers say. As usual at this time, vessel tonnage is being engaged to move ore for the season, but vessel rates have not been established. It is the general belief among producers that prices will be defined some time in February. All of them expect prices will be higher; the amount of the advance at this time, however, can only be conjectured. The Lake Superior Iron Ore association reports the following data regarding consumption and balances on hand:

	Tons
Ore consumed in November	4,554,377
Ore consumed in December	4,964,515
Increase in December	410,138
Ore consumed in December, 1924	4,541,866
Ore on hand at furnaces Jan. 1, 1926	29,817,382
Ore on Lake Erie docks, Jan. 1, 1926	7,081,302
Total at furnaces and Lake Erie docks Jan. 1, 1926	36,898,684
Total, Jan. 1, 1925	36,359,975

Republic Earnings High

Earnings of the Republic Iron & Steel Co. for the last quarter of 1925 are estimated at $1,200,000. This figure would compare with net of $846,461 in the preceding quarter and with $152,932 in the fourth quarter of 1924. For the full year of 1925 the company is estimated to have earned $5,828,000 available for dividends against $1,917,000 in 1924. According to Chairman John A. Topping earnings of the company in the last quarter showed a substantial gain due to increased volume of business.

Concrete Bars

Development of Spring Buying Appearing — Awards Still Are Small

SPRING programs are beginning to materialize in the concrete bar market. Awards still are small and few, but inquiry is broadening. Buffalo sellers are covering ahead and some tonnage has been placed for second quarter delivery. Road work is appearing in the Pennsylvania district. Prices are steady for mill and stock delivery.

REINFORCING BAR PRICES, PAGE 284

Chicago, Jan. 26.—Reinforcing bar awards are light, the only large work let recently being 1100 tons for the Commonwealth Edison Co., warehouse, which went to Truscon Steel Co. Pending work is not heavy. It will probably be another month before the market recovers from the unusual December placements. Billet bars are quoted at 2.60c, Chicago warehouse, but auxiliary material is shaded occasionally. Rail steel bars are 2.00c, Chicago.

Boston, Jan. 26.—The concrete bar market at Boston is active for the season. An unusually heavy tonnage is in prospect. Prices are firm at 2.50c mill and 3.00c to 3.10c Boston warehouse.

Pittsburgh, Jan. 26.—The largest job recently let involving the use of concrete bars is that of the Webster Hall Building Co. hotel taking 600 tons. Numerous smaller jobs have been awarded and many are pending. Four road lettings are due within the next several weeks from the Pennsylvania state highway commission. Concrete bars still are selling at 2.00c to 2.10c, with the warehouse price usually at 2.50c minimum.

Buffalo, Jan. 26.—Contractors are beginning to cover future needs for reinforcing bars, evidently anticipating price advances. Sales were made last week for both road and construction projects for which material actually will not be required for several months. A fair volume of business was booked at 2.265c, Buffalo, on mill shipment lots and 2.75c for truck delivery. Inquiry is good. Some tonnage ordered may not be shipped until the second quarter.

Cleveland, Jan. 26.—Large tonnages still are lacking in the local concrete bar market, but the aggregate of business placed is good. No action has been taken on two sewage disposal plants in this territory requiring 4800 tons. New billet bar prices are steady at 2.19c to 2.35c Cleveland, the bulk of business going at the minimum, except where small lots are involved. Rail steel is firm at 1.85c to 1.95c, mill. Shading is more in evidence in stock prices, ranging from 2.40c to 3.10c Cleveland.

Awards Compared

	Tons
Awards this week	5,900
Awards last week	6,045
Awards two weeks ago	5,424
Awards this week in 1925	4,580
Average weekly awards, Dec.	4,750
Average weekly awards, 1926	3,823

CONTRACTS PLACED

1100 tons, warehouse and manufacturing building for Commonwealth Edison Co., Chicago, to Truscon Steel Co. J. W. Snyder Co., 307 North Michigan avenue, Chicago, contractor.
700 tons, Equitable Trust Co. building, New York, to Jones & Laughlin Steel Corp.
600 tons, hotel for the Webster Hall Building Co., Pittsburgh, to the Kalman Steel Co.
500 tons, sewer, Brooklyn, N. Y., to European mill, through P. J. Carlin Construction Co. general contractor.
500 tons, including 250 tons for the Mohegan Tube Co. building, Brooklyn, 125 tons for the Stancourt Laundry, New York, and 125 tons, Gold Seal laundry, Brooklyn, N. Y., part to Buffalo Steel Co. and part to Truscon Steel Co.
350 tons, unstated building in New York, to Kalman Steel Co.
350 tons, subway work, New York, to Kalman Steel Co., through Rosoff Subway Construction Co., general contractor.
210 tons, school, Philadelphia, to Concrete Steel Co.
200 tons, plant for Philadelphia Rubber Co. at Oakes, Pa., to Franklin Steel Works.
168 tons, footings for tower building of union terminals project, Cleveland, to Jones & Laughlin Steel Corp.
150 tons, grandstand, Newark, N. J., to Truscon Steel Co.
130 tons, Merit Hosiery Co. building, Woodhaven, N. Y., to Concrete Steel Co.
125 tons, subway work in New York, to McClintic-Marshall Co. through Mason & Hanger, general contractors.
125 tons, Coplin store and theater building, Buffalo, N. Y., to unnamed Buffalo seller.
100 tons, academy building, Newark, N. J., to Milton Mfg. Co.
100 tons, Evening Journal building, New York, to Jones & Laughlin Steel Corp. and McClintic-Marshall Co.
100 tons, plant for Firestone Tire & Rubber Co., Akron, O., to Bourne-Fuller Co.
100 tons, Duff-Nash building, Philadelphia, to an unnamed fabricator.
100 tons, Western New York road project, to a Buffalo seller.
100 tons, building for Wanzer Dairy Co., Chicago, to Kalman Steel Co.
90 to 100 tons, Frye garage, Seattle, to Pacific Coast Steel Co.

CONTRACTS PENDING

1000 tons, four different state road projects Pennsylvania State Highway commission; bids being opened.
700 tons, warehouse in Detroit; pending.
600 tons, garage, Boston; bids being taken
600 tons, garage, Boston; bids being taken. by Schmidt, Garden & Martin, 104 South Michigan avenue, Chicago.
400 tons, two junior high schools, Philadelphia; pending.
125 tons, home for feeble minded, New Jersey; pending.

Rails, Cars

Spotty Car Buying Again Active—Heavier Inquiries Appear—Track Materials in Demand

FEATURED by inquiry of 2000 to 3500 cars by the Seaboard and 2350 by the Illinois Central, railroad equipment demand continues to indicate better future buying. Track accessory placements are heavy, including 8000 tons of tie plates at Chicago. Rail specifications are liberal. Locomotive awards are scattered and include 100 tenders by the Pennsylvania.

RAILROAD TRACK MATERIAL PRICES, PAGE 284

Chicago, Jan. 26.—Railroads have been liberal purchasers of track fastenings and have placed 8000 tons of tie plates and 2000 tons of angle bars during the week. Bolt and spike orders are light but inquiry is heavy. Demand for pressed steel wheels continues good.

Rail specifications are heavier than purchases, as is usual at this period. The Soo Line should place 12,000 to 15,000 tons of rails shortly. Bookings of light rails total only a few hundred tons, with the market now $36 to $38 per gross ton.

Competition for business in tie plates has been reflected in prices and 2.25c has been quoted at St. Louis and other western points. The market on tie plates is now 2.25c to 2.35c, Chicago.

Car inquiries are not heavy outside of 2000 to 3500 by the Seaboard Air Line and 2350 by the Illinois Central. The 5041 refrigerator cars for the Pacific Fruit Express still are pending. Because the railroads have been letting their car business out in dribbles the past year, the outlook for fair to heavy buying of cars has not been dimmed. Chicago mills have booked 23,000 tons of heavy finished steel for cars placed recently, including the Burlington's 1000 box cars.

Boston, Jan. 26.—The frog and switch market is unusually active in New England. Eastern Massachusetts Street railway placed $40,000 worth during the week. Sales of track fastenings have been heavy. Prices are firm.

New York, Jan. 26.—Few large awards are noted in the eastern car market. The largest in this district is that of the Seaboard Air Line, which definitely calls for 2000 and which may later be increased. Locomotive demand is scattered.

Pittsburgh, Jan. 26.—Light rail orders have fallen off this past week compared with December although January shipments probably will compare favorably with last month's. The price of $36 per ton still continues to be named.

ORDERS PLACED

New York, New Haven & Western, 12 multiple coaches, and 15 trailer cars, to the Osgood-Bradley Co.

South African Railways, 100 to 200 bogie wagons and 50 to 70 hoppers, recently noted as placed, went to the Leeds Forge Co., Ltd., and the Mercantile Wagon Finance, Ltd., both of England.

Penzoil Co., 50 insulated tank cars of 10,500-gallon capacity to the Standard Steel Car Co.

Florida East Coast, 40 cabooses, to Mt. Vernon Car Mfg. Co.

Soo Line, 500 box cars, to Pullman Car & Mfg. Corp.

Burlington, 1000 box cars, to Pullman Car & Mfg. Co. as announced last week under "Late News Flashes."

Independent Oil & Refining Co., 50 tank cars, to the Pennsylvania Car Co.

Fruit Growers Express, 300 underframes, to the Ryan Car Co.

Wabash, 10 automobile box cars, to the American Car & Foundry Co.

Atlanta, Birmingham & Atlantic, 100 flat cars, to the Virginia Bridge & Iron Co.

Northern Refrigerator Car Co., 300 refrigerator cars to the Pullman Car & Mfg. Co.; these are in addition to 200 reported in last week's issue as going to this company. 335 steel underframes to the American Car & Foundry Co.

Chicago & Northwestern, 250 underframes, to the Ryan Car Co.; 225 freight car superstructures to the General American Car Co., 225 to the Illinois Car & Mfg. Co. and 150 cars to the Pullman Car & Mfg. Co.

Minneapolis, St. Paul & Sault Ste. Marie two coaches to the Pullman Car & Mfg. Co.

Delaware, Lackawanna & Western, 40 milk cars, to the Osgood-Bradley Car Co., 25 cabooses to Magor Car Corp.

LOCOMOTIVE ORDERS

Norfolk Southern, five locomotives, to the Baldwin Locomotive Works.

Pennsylvania railroad, 100 locomotive tenders, to the Baldwin Locomotive Works.

New York, New Haven & Hartford, eight locomotives to the Westinghouse Electric & Mfg. Co., and the Baldwin Locomotive Works, instead of to the General Electric Co., as previously reported.

Illinois Terminal Co., switch engine, to the Baldwin Locomotive Works.

Western Pacific, five locomotives, to the American Locomotive Co.

ORDERS PENDING

Pacific Fruit Express, 5041 refrigerator cars; bids opened Jan. 16, no award as yet.

Illinois Central, 2100 general service cars, 200 solid bottom gondolas and 50 cabooses; pending.

Royal State Railway Department of Siam, all steel goods, wagons; specifications obtainable from C. P. Sandberg, 100 Broadway, New York.

Roxana Petroleum Corp., 500 tank cars; bids asked.

Seaboard Air Line, 1000 gondolas and 1000 box cars, bids asked; may buy from 3000 to 3500.

Wire

Trend Is Upward in Demand With Spring Buying Promising Good Tonnage

GOOD demand marks the market for wire and its products, in spite of a slight lull on the part of automotive users, because of the annual exhibitions. Most users are specifying freely and agricultural buying is expected to be large. New extras will go into effect Feb. 1 on cement coated nails which are to be sold in the future in 100-pound kegs instead of the count keg.

WIRE PRICES, PAGE 284

Chicago, Jan. 26.—Automotive interests are deferring slightly their release dates on wire products because of the usual decline in retail automobile selling prior to the Chicago automobile show. Specifications from other manufacturing users are holding up and the trend in wire and wire products generally continues slightly upward. Despite disquieting reports from the corn country, farm buying of wire products is expected to be heavier this spring than last. Western wire mills are operating at 60 to 70 per cent. Makers have detected a slight strengthening the past week in the levels of 2.55c, Chicago or western mill, for plain wire and 2.70c for wire nails.

Pittsburgh, Jan. 26.—Wire products makers' business has increased considerably in January over December but the increase has been an influx of small orders rather than large individual tonnages. Jobbers are buying only necessities, keeping stocks as low as practicable.

Operations are 60 or 65 per cent of capacity and makers do not expect to increase that much since the country's consuming power is no more than 65 or 70 per cent of productive possibilities. The outlook is bright for heavy spring buying by farmers. As a rule the nail base of 2.65c is firm but occasionally a competitive figure of 2.60c Pittsburgh, is encountered, particularly in southern West Virginia where freight rates are equalized with southern Ohio makers. Cement-coated nails now are sold in 100-pound kegs instead of count kegs. A new card of extras dated Feb. 1, will apply to the regular nail base.

Boston, Jan. 26.—Improved nail demand developed during the week. Dealers have begun to stock for spring trade. Wire sales are quiet with foreign competition given as the reason. Prices are unchanged at 2.875c Boston.

Nonferrous Metals

Lack of Demand, Both on Domestic and Export Account, Felt in All Metals—Prices Are Weak—Zinc Output Is Large

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Jan. 20	14.00	14.12½	13.40	61.75	9.37½	9.12½	8.40	27.00	22.00	35.00
Jan. 21	14.10	14.25	13.42½	62.00	9.37½	9.15	8.40	27.00	22.00	35.00
Jan. 22	14.05	14.25	13.40	62.37½	9.37½	9.15	8.30	27.00	22.00	35.00
Jan. 25	14.00	14.12½	13.35	62.00	9.25	9.10	8.15	27.00	22.00	35.00
Jan. 26	14.00	14.12½	13.35	61.75	9.25	9.10	8.07½	27.00	22.00	35.00

NEW YORK, Jan. 26.—Nonferrous metals recovered partly from their break of a week ago and then in the past two market days turned decidedly weak again due to the lack of buying. This lack was especially true in the European markets and in the export market here. That fact being known among users of metals here, they held off as much as possible. Copper has been relatively firm among the metals, and various men in the trade express the opinion that tin will not go much lower though it is likely to make wide swings. Zinc has been extremely weak and lead easy, while aluminum and nickel have been steady.

Copper—Some domestic buying has been done in the past week, mostly on the basis of 14.00c delivered Connecticut for electrolytic and 14.12½c delivered midwest. However, some business was done ⅛ cent higher and at one time the refinery price crossed 14.00c. Some users, however, were unwilling to follow the market up and others were not very strong for buying just now at any figure, so the market settled back to quietness. At 14.00c producers show much resistance to easiness.

Zinc—Quietness has been unusually prevalent in zinc for more than a week, and with smelters lacking forward orders the price has fallen rapidly. For a time there was considerable spread between prompt shipment and futures, because smelters were well booked for January, but as the other months come closer, the spread narrows. Output is large and exports, which were a factor in strength last autumn, have been entirely absent. It appears the market here is getting nearer to the London price after moving independently of it for a time. The spread within the London market also, between spot and future, is narrowing. When this spread has about disappeared, it is said, the situation is likely to turn firmer.

Tin—A good business has been done in the past week with all classes of users, but the market has been easy at times. The later influence comes from London, where some speculators in this metal also are speculators in rubber, and the weakness in the latter is thought to have bothered some traders in their finances. This relation also applies to other metals in London. Supplies are plentiful at present and spot has been selling about the same as February delivery, running down about ⅞ cent on distant shipments. It is said that shipments from the Orient are in such condition as likely to cause a tighter position in February.

Lead—The heavy metal is easy, after having been one of the steadiest of the group for a long time. Use continues large and shipments good, but output increased last month.

Aluminum—Prices are unchanged and firm but little new business has been done, and users generally are under contract. Old and secondary grades have been a little soft.

Scrap—Prices of old metals have been easy but dealers have made little change in their buying prices.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.12½
Copper, hot rolled	22.50
Zinc, ga. 9 to 17	12.00
Lead full sheets (cut ¼c more)	13.00 to 13.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.75
Copper	24.50
RODS	
High brass (round ⅝ to 2½-inch)	16.87½
Naval brass	19.62½
WIRE	
Copper	16.00 to 16.12½
High brass	19.87½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.00
Chicago	9.50
Cleveland	9.00 to 9.25
HEAVY YELLOW BRASS	
New York	7.00
Chicago	8.25
Cleveland	7.00 to 7.25
ZINC	
New York	5.25
Cleveland	4.75 to 5.00
HEAVY COPPER AND WIRE	
New York	11.75
Chicago	11.50
Cleveland	11.00 to 11.25
RED BRASS BORINGS	
New York	8.25
YELLOW BRASS TUBING	
Cleveland	7.25 to 7.50
LIGHT COPPER	
New York	9.50
Chicago	9.75
Cleveland	9.75 to 10.00
LIGHT BRASS	
Chicago	7.50
Cleveland	6.25 to 6.50
ALUMINUM	
Borings, Cleveland	14.00 to 15.00
Cast	18.00 to 19.00
Clippings	21.00 to 22.00

Secondary Metals

Remelt aluminum No. 12	24.00 to 25.00
Brass ingot 85-5-5-5	11.50 to 12.00

Coke By-Products

Pure Benzol Price Under Level Of 90 Per Cent—Deliveries Better

New York, Jan. 26.—Following a reduction of 1 cent, pure benzol is perhaps for the first time under the price of 90 per cent. That 90 per cent benzol is able to maintain its level may be accounted for by the high toluol content, toluol being about 11 cents higher per gallon. Pure benzol is quoted at 23 cents works in tanks and 28 cents in drums. All other distillates are unchanged, with 90 per cent benzol at 24 cents works in tanks and 29 cents in drums, toluol and solvent naphtha 35 cents works in tanks and 40 cents in drums, and commercial xylol at 36 cents in tanks, and 41 cents in drums. Demand for distillates is well maintained, and all may be had for virtually prompt shipment.

Quotations on sulphate of ammonia for export have been marked down from a range of $2.80 to $2.85 port, in double bags, to $2.70 to $2.75. Domestic prices are unchanged at $2.70 to $2.75, delivered.

Despite increasing activity in naphthalene for spring delivery, prices continue unchanged at 7 cents works for flakes in tank lots and 8 cents for balls. Smaller lots bring premiums up to 1 cent. Phenol remains around 22 cents works, with demand featureless.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.23	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22

Per Pound at Producers' Plants

Naphthalene flakes	0.07
Naphthalene balls	0.08

Per 100 Pounds Delivered

Sulphate of ammonia	$2.82½	

Clarence H. Wilkes, Amsterdam, N. Y., has filed a petition in the Federal Court at Utica asking that the Lock Edge Machine Corp., Gloversville, N. Y., manufacturer of sewing machines, be declared bankrupt.

Northwest Holds Own

Turnover Continues Steady and Building Prospects Indicate Large Demand—Prices Are Steady

SEATTLE, Jan. 21.—Turnover in iron and steel in the Pacific Northwest is holding its own. Prices are holding firm.

The most important announcement of the week is the granting of a permit for the use of water necessary for the development of an $18,000,000 hydroelectric power and industrial project on the Cowlitz river, Lewis county. This work will be prosecuted by the Backus-Brooks Co., of Minneapolis, which will include several large paper and pulp mills, and a 300-foot dam to store 730,000 acre feet of water.

Bars, Plates and Shapes

The local mill is operating steadily on the same basis as heretofore. Specifications from the jobbing trade are increasing although buying by jobbers is not as heavy as had been expected. Improvement is expected shortly. The local mill price remains 2.35c which is in line with eastern competition. Foreign steel is not much in evidence in this market although it has a firmer hold at Portland.

Contrary to reports 252 tons of reinforcing material for the Vantage Ferry bridge had not been awarded yesterday although announcement is expected daily from Portland. The Pacific Coast Steel Co. has the contract for furnishing 90 tons of reinforcing bars for the new Frye garage, Seattle.

Mill prices on plates and shapes continue firm at 2.30c and 2.35c respectively although in some quarters it is reported that shapes have been offered at 2.30c. Demand for light plates continues good but there are no large projects pending in this territory. Bids will be asked soon by the Portland city council for a 42-inch steel pipe for the Vernon district water system, involving considerable plate. M. Barde & Sons, Seattle, have the contract for furnishing 250 tons of plates and structurals required in the rebuilding of the steel steamer CHIPPEWA, which is to be lengthened and widened at the Lake Washington Shipyards, Houghton, Seattle. The same firm has also sold the ship plant the tools and equipment necessary for doing the steel work. The contract price is reported at about $80,000, the next bid by a steel yard having been $120,000. The CHIPPEWA will be altered into an auto and passenger ferry.

Considerable bridge work is in sight for the Northwest. Bids for two 90-foot steel spans, involving 75 tons of structural and 12 tons of reinforcing materials will be opened at Lewiston, Ida., Jan. 30. Bids will be opened Jan. 29 by H. M. Spoon, county auditor, Klickitat county, Wash., for a 60-foot steel bridge and 174 feet of approaches. Washington state highway commission this week awarded $200,000 of road work on seven jobs and on Feb. 16 will receive bids for five additional projects which involve two 126-foot steel spans, two 82-foot T-beam bridges and one 55-foot T-beam structure. The Oregon commission opened bids this week for several bridges the largest being a structure over the Siletz river, Lincoln county, on which the Portland Bridge Co., $104,740, was low bidder. Opening of bids for the Washington state Masonic home has been postponed from Jan. 22 to Jan. 29. This will be a $1,000,000 structure.

Finished Materials

Trade is rather slow with the jobbing houses, buying being on a hand to mouth basis. Sheets and plates are moving in fairly satisfactory tonnages but business has not opened up actively. Prices are firm and the situation is generally favorable.

A lot of 100 tons of imported rails arrived here this week for a logging railroad extension. There is little interest here in foreign iron and steel.

Aberdeen, Wash., has awarded contracts totaling $30,000 for water pipe, valves and accessories to the United States Cast Iron Pipe & Foundry Co., Pacific Water Works Supply Co., the Crane Co. and Rensselaer Valve Co.

The American Cast Iron Pipe Co. has taken 350 tons of pipe for various local improvements in Seattle. The same firm has also closed about 125 tons of pipe at Tacoma. The same company is increasing its local stock to 300 tons. Bids were opened this week at Oswego, Ore., for about 500 tons of pipe. Bids are to be opened by Seattle this week for 457 tons for the Federal avenue pipe line.

Old Materials

There is little interest in iron and steel scrap. Steel scrap is steady at $10.50 and $11 gross, the same amount being received and handled by the main buying interest here. Cast iron scrap is exciting little interest and the turnover is limited. Japanese buyers are finding it difficult to export steel scrap under present advancing trans-Pacific freight rates although they are searching the market for cheap lots.

Start Aluminum Mill

Jackson, Mich., Jan. 26.—Operations have been started at the aluminum rolling mill plant here of the Sheet Aluminum Corp., which firm has succeeded the Northern Mfg. Co. which was organized for plant construction purposes. A full line of aluminum sheets is being produced. Rolling mill equipment and other machinery was especially designed for the plant.

The general sales offices of the company are in the Ford building, Detroit, with W. J. Moore, vice president, in charge. Mr. Moore also is president of the Allied Metal Products Corp., Detroit, manufacturer of extruded aluminum moldings, bars and shapes.

Fabrication of Steel Plate Highest Since June

Washington, Jan. 26.—Total bookings of fabricated steel plate in December of 31,395 tons were the highest of any month since June, according to reports of 36 companies to the department of commerce. Gains were registered by oil storage tanks, gas holders and miscellaneous needs while blast furnace tonnage dropped. Further comparisons of bookings for 1925 follow:

	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1923	539,043	296,128	44,576	9,815	141,359
1924	313,109	123,368	43,747	12,601	108,046
Dec.	**49,559**	**26,445**	**9,223**	**2,697**	**9,088**
1925—					
Jan.	**27,064**	**4,314**	**6,529**	**4,495**	**9,276**
Feb.	**20,805**	**3,321**	**4,059**	**289**	**7,763**
March	**22,502**	**2,908**	**3,635**	**651**	**8,158**
April	**22,421**	**6,547**	**1,460**	**682**	**9,351**
May	**27,684**	**8,503**	**2,118**	**404**	**10,141**
June	34,402	16,327	2,192	373	11,349
July	29,242	16,327	2,192	373	11,349
Aug.*	29,261	7,500	3,671	1,240	11,826
Sept.*	23,988	8,458	1,510	427	10,600
Oct.	28,338	8,076	1,432	2,500	12,621
Nov.	28,557	7,492	4,559	581	9,491
Dec.	31,395	7,714	3,172	407	14,586
Totals	325,649	87,541	36,591	12,651	129,321

*Revised.

George Burrell Retires

George W. Burrell, vice president and assistant general manager of the Wellman-Seaver-Morgan Co., Cleveland, has tendered his resignation effective at the annual meeting of the company in February. Regret of the board of directors was expressed as a result of his resignation addressed Jan. 13 to John H. Bode, president of the company. Mr. Burrell retires to take his second vacation in the 28 years that he has been connected with the Wellman-Seaver-Morgan Co. He entered its employ in 1898 as a draftsman and was advanced steadily, holding positions as inspector, chief inspector, assistant purchasing agent, assistant secretary, assistant works manager, second vice president in charge of operations, and in 1922 he was elected vice president and general manager, from which capacity he retires. After an extended vacation he will be retired from business except for supervision of various personal interests.

British Demand Is More Active

Pig Iron Requirements Larger Than Middlesbrough Furnaces Can Supply—Rail Mills Increase Operating Rate—Belgian Steelworks Strikers Returning —German Exports Improving, Prices Advancing

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Jan. 26.—(*By Cable*)—Demand for Middlesbrough pig iron exceeds supply, and prices are rising. Fears of another coal crisis prevent furnace interests from relighting stacks, and are discouraging forward buying.

British rail mills are more active, and orders for steel are slowly expanding, except for shipbuilding. Competition from continental mills is weakening prices of bars.

A report from Paris states French interests have sold 500 tons of semiphosphorus pig iron at $19, c.i.f., New York. Good sales of seminished material to British India are noted. Some mills are booked six months ahead.

The steelworks strikers in the Charleroi district of Belgium are resuming work, but the number of plants that have reopened is insufficient to affect prices. It is noted that French competition is absent in Belgium.

Iron and steel works in Luxemburg are seeking higher prices. German exports are improving.

British Railroads To Use Only Domestic Steel

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Jan. 20.—(*European Staff Service*)—The new year has opened rather quietly, with orders decidedly moderate. Makers of pig iron have maintained recent advances, and stoppage of steel works has assisted in getting rid of arrears of orders for hematite accumulating for some weeks. The position will require to be clearer before additional furnaces are started, the general opinion being that the recent plant brought into operation will suffice for prospective requirements.

On the East Coast, expansion has been checked a little by falling off in foreign business, discounting, to

Sterling $4.85

some extent, expansion in home demand. This possibility was recognized when the advance was declared, but in view of the rise in coke makers felt bound to take the risk. Coke values are maintained at £1 2s 6d ($5.45) delivered Cleveland. The furnaces are so well contracted for furnace fuel that they can afford to await the course of events, and any further rise seems to be unlikely for a while unless foreign buying of coke undergoes a sharp development.

The time has obviously not arrived for steel advances. A report from Glasgow is to the effect that ship plates have advanced 2s 6d ($0.60) per ton. The amount of shipbuilding work placed lately does not encourage the assumption that this advance will be obtained. Undoubtedly, steel prices are rather firmer, but there is so much unemployed plant, it is easy to book almost any tonnage at recent rates.

The position is obviously a little more favorable at the works as there is less keenness to fight for any tonnage available. On the other hand, rolling lists regularly handed to constructional engineers and others, while they indicate that nearly all the mills are operating, show a widely miscellaneous range of production, enabling almost any product to be ob-

(*Concluded on Page* 307)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, January 25	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d			Francs		Francs	£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.01	3 10 0*	$15.29	410	$15.01	330	$17.01	3 10 0
Basic	16.28	3 7 0	15.29	410	14.79	325	15.07	3 2 0
Basic-bessemer	18.71	3 17 0†	14.73	395	14.56	320	17.01	3 10 0
Hematite, Phosphorus 0.02-0.05	20.41	4 4 0	19.58	525	.....	...	18.23	3 15 0
SEMIFINISHED STEEL								
Billets	$26.73	5 10 0	$21.26	570	$21.61	475	$24.30	5 0 0
Wire rods	44.96	9 5 0	29.46	790	29.80	655	27.94	5 15 0
FINISHED STEEL								
Standard rails	$35.24	7 5 0	$24.99	670	$29.12	640	$31.59	6 10 0
Merchant bars	1.52c	7 0 0	1.17c	690	1.20c	570	1.16c	5 7 0
Structural shapes	1.33c	6 2 6	1.09c	640	1.09c	520	1.06c	4 18 0
Plates, ship, bridge and tank	1.55c	7 2 6	1.20c	705	1.22c	580	1.30c	6 0 0
Sheets, black, 24 gage	2.22c	10 5 0	2.21c	1,300	2.25c	1,070	2.55c	11 15 0
Sheets, galvanized, 24 gage, corrugated	3.58c	16 10 0	3.23c	1,900	4.62c	2,200	3.69c	17 0 0
Bands and strips	2.28c	10 10 0	1.36c	800	1.52c	725	1.52c	7 0 0
Plain wire, base	2.39c	11 0 0	1.96c	1,150	1.79c	850	1.68c	7 15 0
Galvanized wire, base	3.04c	14 0 0	2.55c	1,500	2.31c	1,100	2.00c	9 5 0
Wire nails, base	3.15c	14 10 0	2.07c	1,220	1.89c	900	1.93c	8 15 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	...	.....	...	$ 6.56	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.65	3 8 6	$14.73	395(2)	$14.79	325	$19.55	85
Basic pig iron	16.28	3 7 0	14.55	390(1)	14.11	310	20.24	88
Furnace coke	3.89	0 16 0	5.33	143	5.69	125	5.06	22
Billets	26.73	5 10 0	21.26	570	21.16	465	27.37	119
Standard rails	1.68c	7 15 0	1.04c	610	1.22c	580	1.48c	142
Merchant bars	1.55c	7 2 6	1.11c	650	1.24c	590	1.36c	130
Shapes	1.41c	6 10 0	1.04c	610	1.19c	565	1.37c	131
Plates, ship, bridge and tank	1.57c	7 5 0	1.32c	775	1.31c	625	1.48c	142
Sheets, black, 24 gage	2.33c	10 15 0	2.21c	1,300	2.22c	1,055	2.14c	205
Sheets, galvanized 24 gage, corrugated	1.44c	16 12 6	3.15c	1,850	4.73c	2,250	3.55c	340
Plain wire	2.39c	11 0 0	1.91c	1,125	1.79c	850	1.77c	170
Bands and Strips	2.28c	10 10 0	1.33c	780	1.58c	750	1.56c	150

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 16s 0d ($3.89) f. o. b. Ferromanganese £15 5s 0d ($74.12) f. o. b. German ferromanganese £14 0s 0d ($68.04) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

Two Railroad Lists Involve About 60 Tools—Buying in Last Week Somewhat Heavier—Crane Market More Active

ACTIVITY in machine tool and equipment buying has shown improvement during the past week but still is well below the level of December, which was a good month. Sales during the month probably will total about two-thirds of those of that month. Two railroad inquiries calling for about 30 tools each have just come before the trade. Central of Georgia needs additional equipment for installation at Macon, Ga., and Cedartown, Ga. As announced last week, Chicago & Northwestern has appropriated $500,000 for tool equipment and its Chicago inquiry is the result. Both General Electric Co. and Westinghouse Electric & Mfg. Co. are in the market for small lots of tools. Equipment deliveries are somewhat better. Crane buying is renewed.

New York, Jan. 26.—While in some particular lines machine tool buying is not so active, the market as a whole is fairly brisk. The largest inquiry is that of the Central of Georgia, involving fully 30 machine tools, for installation at Macon, Ga., and Cedartown, Ga. General Electric Co., Schenectady, N. Y., continues to inquire. Within the past week it has asked bids on four engine lathes, three grinders, a radial drill and a drill press, the majority of which are going to West Lynn, Mass. This company also has been buying actively for Schenectady. New York Central has closed on three axle lathes to the Niles-Bement-Pond Co., and on a shaper to a Cincinnati builder. This railroad is now inquiring for four additional shapers. Included in the list of the Central of Georgia are five miscellaneous grinders, at least seven radial drills, including one 4-foot drill; three power hack saws, one slab miller; one large universal miller; a 54-inch boring mill; several punch and shearing machines; a valve facing machine and a floor boring machine.

Boston, Jan. 26.—While the active machine tool buying being done earlier in the month fell off slightly during the past week, inquiry shows improvement and there is much underlying strength in the market. Sales of used tools have shown moderate increase. An eastern Massachusetts manufacturer bought four used tools for establishing a new department, and one of the leading dealers reports seven tools sold during the week. Boston & Albany railroad is in the market for several tools including a planer and a lathe. A Springfield, Mass., manufacturer has a list out totaling in excess of $10,000. A Massachusetts stamping plant is looking for four presses. A new company starting at New Bedford, Mass., is considering purchasing from five to ten tools. Most machine tool manufacturers in the district report an increase in orders since the first of the month, and production generally is at a high rate. Prices are unchanged, but appear firmer in some cases.

Pittsburgh, Jan. 26.—Machine tool and equipment buying is proceeding along piecemeal lines, purchasers only taking what they have to have—one or two machines at a time. The general trading is therefore, much scattered. Westinghouse Electric & Mfg. Co., however, is expected to start purchasing against its quarterly list within this next week or two. The several trade high school lists likewise will be closed. The largest crane purchase since the Bethlehem Steel Corp. awarded 10 or 12 to the Morgan Enginering Co. is that of the Carnegie Steel Co. for Homestead, placed with the Alliance Machine Co., for four. Several single crane orders likewise are noted.

Chicago, Jan. 26.—Railroads continue to provide the chief inquiry in the machinery market. Chicago & North Western has come into the market for six 75-ton bushing presses, a pneumatic flanger, an internal grinder, a 20-inch x 8-foot machine lathe, a crank pin turning machine, a 4½-inch x 8-foot cylinder boring bar, a 36-inch throat punch and shear, three emery wheel grinders, a double head tool grinder, a double head emery wheel grinder, a 24-inch tool room shaper, a 32-inch heavy duty shaper, a 40-inch upright drill press, a hot saw and tube expanding machine, an elliptical spring forming machine and three engine lathes, 18-inch x 8-foot, 16-inch x 8 foot and 16-inch x 10-foot. Bids on this list close Jan. 28. New York Central has issued additional inquiry, including two 4-foot radial drills, a wheel press and an 18-inch grinder.

Cleveland, Jan. 26.—After a rather quiet buying period during the early part of the month, business in the last week has been somewhat heavier. Individually, sales are small but the total is favorable. It is doubtful, however, if January orders will represent more than two-thirds of those taken in December, which was a good month. Dealers report deliveries sold up until after March. Manufacturers in this territory have fair stocks and are able to give fairly prompt shipment. Although proceeding with caution to gage the spring demand for motor cars, automobile manufacturers continue to buy equipment rather heavily. Used equipment moves only moderately well. Ohio Pipe Co., Dover, O., wants a pipe machine for cutting from 4 to 10 inch sizes. American Standard Tool Co., Pontiac, Mich., is increasing its production considerably and is expected to be in the market for additional equipment shortly.

CRANE ORDERS PLACED

Fourteen handpower cranes, ranging from 1 to 5-ton capacity, for silk plant in Tennessee, through Lockwood, Greene & Co., to Bacon Co., New York; several hoists to American Engineering Co. and trackage to Louden Co.

Six electric overhead cranes, including four 25-ton with 5-ton auxiliary and two 50-ton with 10-ton auxiliary, for Reading Co., Reading, Pa., to Niles-Crane Corp.

Five cranes, including two 20-ton trolley, two 10-ton gantry and one 5-ton trolley for Colorado Fuel & Iron Co., Denver, to Alliance Machine Co.

Four cranes, including one 15-ton overhead, one 5-ton grab bucket crane, one 5-ton electric overhead and one 7½-ton wide gage trolley crane, for different manufacturers in Pittsburgh and nearby territories, to Shaw Electric Crane Works, through Manning, Maxwell & Moore, Inc.

Three cranes, including one 80-ton overhead one 20-ton magnet handling crane and one special 10-ton wall crane for Carnegie Steel Co., Homestead, Pa., as noted last week as placed, awarded to Alliance Machine Co.

Two 3-ton special cranes for Pittsburgh Plate Glass Co., to Alliance Machine Co.

Among single orders were: 5-ton handpower crane for city of Providence, R. I. for installation at its purification works at Hope, R. I., to New Jersey Foundry & Machine Co.; 3-ton handpower crane for United States Engineers, Porto Rico, to New Jersey Foundry & Machine Co.; 1½-ton handpower crane for a Vermont dealer, to New Jersey Foundry & Machine Co.; small handpower crane and electric hoist for Public Service Production Co., Newark, N. J., to New Jersey Foundry & Machine Co.; 25-ton electric crane for Castanea Paper Co., New York, to Whiting Corp.; 10-ton electric crane for New York Edison Co., New York, to Shaw Electric Crane Works; 40-ton locomotive crane for Foundation Co., New York, to Industrial Works; 3-ton locomotive crane for Stacy Bros. Construction Co., Cincinnati, to McMyler-Interstate Co.; used locomotive crane for Evansville Sand & Gravel Co., Chicago, to unnamed dealer; 100-ton crane for Buffalo General Electric Co., Buffalo, to Whiting Corp.; 4-ton crane for Mangel & Co., Louisville, Ky., to Whiting Corp.; 7½-ton standard crane for Follansbee Bros. Co., to Alliance Machine Co.; 100-ton ladle crane for Inland Steel Co., Indiana Harbor, Ind., to Alliance Machine Co.; one trolley for Pittsburgh Steel Co., to Alliance Machine Co.; 5-ton charging and drawing machine for Bethlehem Steel Co., to Alliance Machine Co.

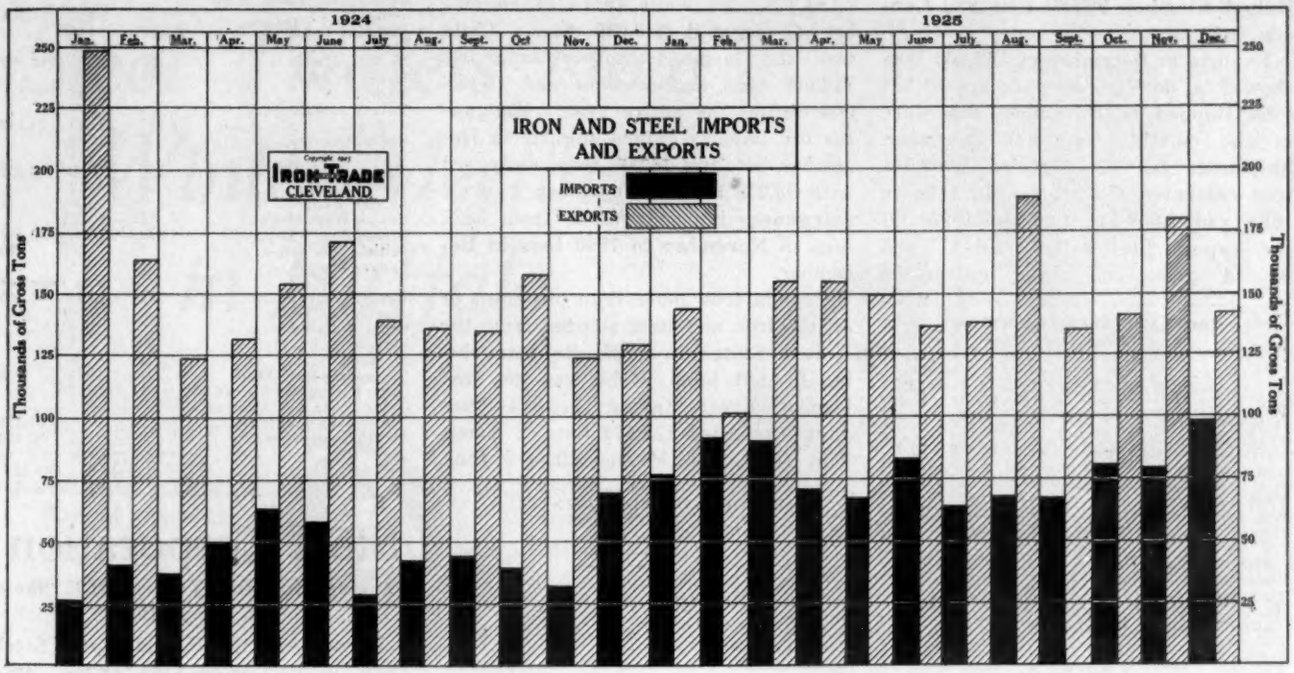
CRANE ORDERS PENDING

Cranes for Carnegie Steel Co. and other large steel interests; bids being taken.

Cranes for Weirton Steel Co., Weirton, W. Va.; bids being compiled.

5-ton crane for Standard Sanitary Mfg. Co., New Brighton, Pa.; bids being taken.

5-ton crane for Wilputte by-product coke oven plant of Jones & Laughlin Steel Corp., Hazelwood, Pittsburgh; bids being taken.



Steel Imports Jump—Exports Drop

STRENGTHENED by 53,333 tons of pig iron, imports of iron and steel in December totaled 98,400 tons, the highest since March 1923, when 106,206 tons was received, according to data just released by the department of commerce. Total imports in 1925 of 943,240 tons were the highest on record. Of the 1925 total 441,425 tons was pig iron. Most of this came from British possessions, British India supplying 184,325 tons,

IRON AND STEEL IMPORTS
Gross Tons

	Dec. 1925	Nov. 1925	Year ended Dec. 1925	Year ended Dec. 1924
Pig iron	53,333	34,722	441,425	209,109
Ferromanganese	7,560	5,827	75,724	47,922
Ferrosilicon	143	346	4,555	11,991
Scrap	10,418	13,160	99,815	66,841
Semifinished steel	1,635	2,405	27,083	39,023
Steel bars	6,504	5,771	58,811	(1)
Iron bars	828	757	11,738	4,325
Structural shapes	3,798	4,837	77,293	43,245
Rails and splice bars	244	1,359	36,871	43,358
Boiler and other plates	24	152	818	3,276
Sheets, skelp and sawplates	455	213	3,663	2,790
Tin plate	55	62	383	1,036
Round iron and steel wire	243	453	4,053	3,278
Wire rope, insulated wire	122	207	2,127	13,657
Flat wire, strip steel	204	169	2,190	2,088
Wire rods	656	955	7,989	6,851
Tubular products	11,802	7,895	82,864	54,473
Nails and screws	210	323	2,758	451
Bolts, nuts, rivets and washers	1	4	105	165
Castings and forgings	165	164	2,975	2,854
Total	98,400	79,771	943,240	556,733

(1) Included with steel ingots, blooms, billets and slabs.

ORIGIN OF MANGANESE ORE IMPORTS
Gross Tons

	Dec., 1925	Nov., 1925
Canada	17	.....
Brazil	19,175	12,550
British West Africa	.....	5,091
Russia-in-Europe	16,066	14,178
Chile	1,019	165
Canada	.....	1,092
Netherlands	.....	5
Other Countries	.....	151
Germany	.....	6
British India	631	.....
Total	36,908	33,238

ORIGIN OF FERROMANGANESE IMPORTS
Gross Tons

	Dec., 1925	Nov., 1925
France	37	.....
United Kingdom	1,210	1,391
Russia-in-Europe	4,787	.....
Canada	1,508	1,179
Italy	.....	11
Chile	18	.....
Brazil	.....	3,246
Total	7,560	5,827

ORIGIN OF PIG IRON IMPORTS
Gross Tons

	Dec., 1925	Nov., 1925	Year ending Dec., 1925
Belgium	2,030	600	11,068
British India	13,552	12,567	184,325
France	1,400	100	9,814
Germany	9,200	3,550	75,052
United Kingdom	20,148	8,325	96,869
Netherlands	6,075	8,991	54,904
Sweden	266	100	2,169
Canada	662	429	6,455
Kwangtung, leased territory	.....	.....	566
Straits Settlements	.....	.....	.....
British W. Africa	.....	.....	100
China	.....	.....	100
Totals	53,333	34,712	441,425

ORIGIN OF IRON ORE IMPORTS
Gross Tons

	Dec. 1925	Nov. 1925	Year ending Dec. 1925
Algeria and Tunis	13,075	.....	173,070
Chile	142,000	159,100	1,113,900
Cuba	62,500	58,500	535,130
Spain	20	6,231	150,632
Sweden	20,324	13,849	141,325
Germany	1,432	503	.....
Canada	.....	615	7,335
United Kingdom	204	.....	.....
France	.....	6,345	.....
Brazil	.....	600	.....
Australia	.....	140	.....
Other countries	.....	8,108	73,386
Totals	240,049	246,403	2,101,529

IMPORTS OF IRON AND STEEL FOR DECEMBER, 1925, BY COUNTRIES
Gross Tons

	Dec., 1925	Year ended Dec., 1925
Austria	43	200
Belgium	8,992	168,990
Czechoslovakia	101	2,529
Denmark	5	71
France	10,857	86,539
Germany	13,263	105,094
Irish Free State	2	21
Italy	26	322
Netherlands	7,294	66,936
Norway	8	8,389
Russia in Europe	4,787	4,787
Spain	20	203
Sweden	2,984	31,911
Switzerland	1	169
United Kingdom	23,068	155,487
Canada	7,348	84,774
Mexico	22	1,420
Bermuda	1	126
Other British West Indies	123	253
Cuba	5,614	32,847
Chile	18	18
British India	13,553	85,347
Ceylon	5	43
China	1	263
Java and Madura	5	44
Other Dutch East Indies	1	1
Hongkong	2	301
Japan	11	89
Australia	1	3
Belgian Kongo	244	1,653
Azores and Madeira Islands	.....	1
Finland	.....	18
Greece	.....	3
Poland and Danzig	.....	2
Turkey in Europe	.....	484
Guatemala	.....	2
Panama	.....	16
Salvador	.....	2
Jamaica	.....	1
Trinidad and Tobago	.....	28
Dominican Republic	.....	3
Virgin Islands of U. S.	.....	30
Argentina	.....	30
Uruguay	.....	1
Straits Settlement	.....	1
Kwangtung	.....	566
Palestine and Syria	.....	1
Turkey in Asia	.....	3
British West Africa	.....	51
British South Africa	.....	117
Egypt	.....	1
Algeria and Tunis	.....	59
Other French Africa	.....	2
Total	98,400	943,240

United Kingdom 96,869 tons and Canada 6455 tons.

Exports in December of 142,209 tons showed a decided drop from 171,134 tons shipped in November, but were at the monthly rate for the year. Shipments for 1925 totaled 1,762,571 tons compared with 1,804,378 tons in 1924 and 2,009,141 tons in 1923. Of the export list, boiler tubes and welded pipe, tin plate, galvanized sheets, black steel sheets and semi-finished furnished the largest tonnages.

Iron ore imports for 1925 totaled 2,194,778 tons while those of December aggregated 240,049 tons. Chile was the largest shipper, supplying 142,000 tons in December and 1,113,900 during the entire year. Manganese ore imports gained slightly in December, totaling 36,908 tons, compared with 33,238 tons in November. Ferromanganese imports gained from 5827 tons in November to 7560 tons in December.

Canada took more than one-third of all the iron and steel shipped from the United States in 1925, its total being 614,661 tons. Cuba was the next largest buyer, taking 146,823 tons. Japan imported 132,674 tons of American steel, and Mexico 102,412 tons.

IRON AND STEEL EXPORTS
Gross Tons

	Dec. 1925	Nov. 1925	Year ended December 1925	1924
Pig iron	2,626	4,272	32,674	41,483
Ferromanganese	40	173	5,496	3,165
Scrap	3,705	6,352	82,573	97,447
Ingots, blooms, etc.	10,448	15,236	87,478	96,155
Iron bars	263	232	4,615	5,054
Steel bars	9,859	10,973	111,948	98,381
Alloy steel bars	567	42	3,691	2,742
Wire rods	1,834	1,547	21,203	18,762
Plates	9,933	10,983	104,450	85,047
Galvanized Sheets	12,410	15,607	160,270	108,152
Black steel sheets	11,357	11,281	95,431	148,742
Black iron sheets	1,854	1,254	14,768	11,005
Hoops, bands and strip	4,055	4,057	40,933	34,141
Tin plate	13,001	20,328	161,383	160,997
Structural, plain	9,640	12,247	104,339	102,408
Structural, fabricated	6,954	9,799	73,460	70,786
Metal lath	303	434	3,441	2,310
Steel rails	4,820	7,136	151,690	208,829
Rail fastenings	1,843	1,691	35,367	36,113
Boiler tubes and welded pipe	17,207	18,858	229,786	200,951
Malleable screwed pipe fittings	980	1,013	9,884	11,024
Cast screwed pipe fittings	666	602	6,724	
Cast pressure pipe and fittings	1,256	1,850	15,408	28,771
Cast soil pipe and fittings	936	365	10,061	
Plain wire	2,770	2,215	35,596	37,054
Barbed wire and woven wire fencing	5,873	5,889	71,115	90,449
Wire cloth and screening	197	161	1,951	1,630
Wire rope	315	413	4,369	4,187
Insulated wire and cable	24	51	640	979
Other wire	817	600	8,372	11,218
Wire nails	944	1,114	9,837	21,665
Other nails	852	841	9,229	7,886
Horseshoes	85	31	706	964
Bolts, nuts, rivets, etc.	1,479	1,261	16,956	17,497
Car wheels and axles	1,109	1,449	19,936	22,329
Iron castings	823	450	10,412	8,460
Steel castings	255	125	4,209	5,880
Forgings	109	202	2,170	1,715
Total	142,209	171,134	1,762,571	1,804,378

ORIGIN OF IMPORTS

	Scrap Dec.	Scrap Nov.	Rails Dec.	Rails Nov.
Germany	.....	349	.....	135
Sweden	70	98	.....	.....
Canada	4,595	6,523	158	.....
Dominican Republic	.....	6,037	.....	.....
Belgium	.....	.....	86	705
Netherlands	.....	.....	.....	519
Other countries	.....	153	.....	.....
Mexico	21	.....	.....	.....
Cuba	5,608	.....	.....	.....
	10,418	13,169	244	1,359

IMPORTS OF CAST IRON PIPE
Gross Tons

	1925 December	1925 November
Belgium	918	647
France	6,246	8,852
Canada	6	404
Total	7,170	4,903

EXPORTS OF IRON AND STEEL BY COUNTRIES
Gross Tons

COUNTRIES	December 1925	Year ended December 1925	1924
Azores and Madeira Is.	1	4	....
Belgium	209	9,034	9,542
Bulgaria	....	116	....
Czechoslovakia	....	83	....
Denmark	104	1,391	613
Esthonia	1	1	....
Finland	1	1,213	....
France	907	9,047	2,625
Germany	106	2,488	1,235
Gibraltar	....	23	....
Greece	1,146	4,175	....
Hungary	4	7	....
Iceland and Faroe Is.	....	3	....
Irish Free State	....	52	Included in U. K.
Italy	262	41,767	22,511
Latvia	....	35	....
Lithuania	....	3	....
Malta, Gozo, and Cyprus Islands	....	47	....
Netherlands	105	2,735	2,262
Norway	91	3,470	3,250
Poland and Danzig	....	124	....
Portugal	1	728	1,110
Rumania	696	1,995	....
Russia in Europe	2,034	3,562	....
Spain	331	6,117	4,299
Sweden	37	664	701
Switzerland	6	102	248
Turkey in Europe	39	1,827	....
United Kingdom	4,734	52,261	56,855
Yugoslavia and Albania	....	220	....
Canada	54,538	614,661	550,593
British Honduras	107	221	....
Costa Rica	191	2,954	....
Guatemala	927	7,600	13,686
Honduras	461	5,963	7,653
Nicaragua	971	5,779	....
Panama	699	14,626	13,544
Salvador	325	15,393	....
Mexico	6,717	102,412	108,512
Miquelon and St. Pierre Islands	1	7	....
Newfoundland and Labrador	138	1,701	....
Bermuda	30	242	....
Barbados	1	23	....
Jamaica	180	1,530	....
Trinidad and Tobago	725	5,746	....
Other Brit. West Ind.	130	2,321	7,458
Cuba	10,650	146,823	165,637
Dominican Republic	579	10,487	11,309
Dutch West Indies	220	3,741	....
French West Indies	....	13	....
Haiti	254	1,945	....
Virgin Islands of U. S.	20	274	....
Argentina	4,056	87,296	55,388
Bolivia	183	1,855	....
Brazil	2,759	46,016	68,139
Chile	2,807	44,940	31,854
Colombia	5,001	77,336	39,288
Ecuador	210	2,218	....
British Guiana	13	571	....
Dutch Guiana	73	661	....
Paraguay	2	110	....
Peru	2,608	17,895	28,177
Uruguay	521	5,433	4,597
Venezuela	5,310	35,232	24,874
Aden	....	1	
British India	3,450	25,750	23,675
Ceylon	104	174	
Straits Settlements	671	6,301	1,973
Other British East Ind.	414	418	....
China	1,517	56,816	57,126
Chosen	3	215	....
Java and Madura	395	8,597	....
Other Dutch East Ind.	751	16,597	....
French Indo-China	....	2	....
Hejaz, Arabia, etc.	13	56	....
Hongkong	75	3,569	11,086
Japan	14,219	132,674	277,204
Kwangtun, leased territory	37	1,802	17,204
Palestine and Syria	69	434	....
Persia	....	1,197	....
Philippine Islands	4,400	46,896	48,909
Russia in Asia	183	150	....
Siam	3	185	....
Turkey in Asia	....	497	....
Australia	2,137	22,543	23,148
British Oceania	5	73	....
French Oceania	2	121	....
New Zealand	239	2,060	3,230
Other Oceania	....	12	....
Belgian Kongo	....	106	....
British West Africa	2	98	....
British South Africa	992	23,208	31,287
British East Africa	3	60	80
Canary Islands	1	1	....
Egypt	131	3,314	and Palestine 1,965
Algeria and Tunis	....	20	....
Other French Africa	....	5	....
Liberia	20	73	....
Morocco	4	64	....
Portuguese East Africa	92	981	938
Other Portuguese Africa	1	142	....
Other South and Central American countries	....	....	21,234
All other countries	....	....	50 134
Total	142,209	1,762,571	1,805 153

Steel Corporation

Earnings for Full Year of 1925 Show Gain Over 1924

Earnings of the United States Steel Corp. in 1925 were $165,188,100 compared with $153,114,811 in 1924. During the fourth quarter the corporation earned $42,280,465 against $42,400,412 in the preceding quarter and $30,939,911 in the corresponding quarter of 1924. The regular dividend on common stock of 1¼ per cent and an extra 50 cents a share were declared. The comparative income account for 1924 and 1925 unofficially, with the figures for 1925 based upon the quarterly statements, follow:

Earnings:	1925	1924
First quarter	$39,882,992	$50,075,445
Second quarter	40,624,221	41,381,039
Third quarter	42,400,412	30,718,415
Fourth quarter	42,280,465	30,939,911
*Total for year	165,188,100	153,114,811
Depreciation, depletion and sinking funds	56,012,681	48,892,837
Net income	109,175,409	104,221,974
Premium and Interest on bonds	18,864,158	19,241,853
Add: Adjustments	122,043	87,069
Balance	60,678,809	85,067,191
Dividends:		
Preferred	25,219,677	25,219,677
Common	35,581,175	35,581,175
Surplus	29,632,442	24,266,339
Less: Sums for additions and betterments	25,000,000	20,000,000
Balance carried forw'd	4,632,442	4,266,339

*After taxes and subsidiary bond interest.

The earnings by months and the comparative quarterly earnings are shown in the following table:

	Fourth Quarter 1925	†Third Quarter 1925	Fourth Quarter 1924
October	$14,591,975	$13,908,513	$12,236,014
November	14,210,992	14,399,265	8,903,576
December	13,477,498	14,092,634	9,622,641
Net earnings	42,280,465	42,400,412	30,762,231
Depreciations, etc.	11,478,616	11,233,089	9,237,121
Bond int.	4,390,941	4,407,654	4,520,746
Sinking fund	2,704,227	2,685,439	2,611,084
Pre. on bonds redeemed	294,548	269,407	217,645
Deductions	7,267,675	7,362,588	7,262,405
Net income	23,534,174	23,804,823	14,262,705
Dividends:			
Preferred	6,304,919	6,304,919	6,304,920
Common	6,353,781	6,353,781	6,353,782
Com. extra	2,541,512	2,541,512	2,541,512
Surplus	8,333,960	8,604,611	‡937,509

†July, August, September in third quarter. ‡Deficit.

Steel Treaters Hold Winter Meeting in Buffalo

Excellent Technical Papers Appear on Program

Gary and Schwab Made Honorary Members

THE winter sectional meeting of the American Society for Steel Treating held at the Hotel Statler, Buffalo, Jan. 21-22, may be characterized as one of the most productive meetings which the organization has sponsored, not excepting national conventions. The three technical sessions were of high order and developed considerable valuable discussion. About 300 members of the society and guests attended the meetings.

Among the subjects considered by presentation of papers were functions of the laboratory, X-ray structure of iron-carbon alloys, effect of size and shape on quenching, electric steel melting, macroscopic examination and iron-chromium alloys. The latter paper was of particular significance, in that it reports the development of delta iron and its preservation at room temperature. Another investigator in February will report a similar development in tungsten-iron alloys, indicating that delta iron actually exists. Metallurgists are convinced that the discovery is of considerable importance.

Judge E. H. Gary and C. M. Schwab were elected to honorary membership in the society at the board of directors meeting held the day preceding the convention. Technical sessions were held on Thursday and Friday mornings and Friday evening. An informal banquet was served on Thursday evening. Numerous plant visitations were arranged for the afternoons.

Laboratory Inspection Controls Steel Quality

INITIATING the technical program of the meeting was the session held in the ballroom on Thursday morning with Dr. Zay Jeffries, head of research bureau, Aluminum Co. of America, Cleveland, and treasurer of the society presiding. The first paper, "The Laboratory as a Factor in the Inspection of Alloy and Tool Steels," was presented by W. H. Wills Jr., metallurgist, Atlas Steel Corp., Dunkirk, N. Y. The speaker stated that steel formerly was purchased largely by brand name but with users now paying more attention to production problems, purchase according to specifications has become general. After reciting briefly the specifications for various grades of steel, he said the function of the laboratory was to control the production of these steels.

The laboratory of his company has two main divisions, namely chemical and physical, separate personnels being maintained. Much of the work of the chemical division is conducting ladle tests, although some tests are made on the finished product. Laboratory equipment consists of photomicrographic apparatus, hardness testers, pyrometers, magnetic testing apparatus and experimental furnaces. The physical testing division is provided with photomicrographic apparatus for fracture examination, complete etching equipment, testing machines, hardness testers and extensive apparatus for magnetic analysis of magnet steels.

Laboratory Is Good Investment

This laboratory spends considerable time in giving service to customers. Records show that 30 per cent of customers' complaints concern heat treatment. Another function of the laboratory is to conduct research work in the development of new steels for required uses such as automotive valve steels and punch and die steels. In closing his remarks, Mr. Wills stated that a well-equipped laboratory is an investment which earns a good return.

In the second paper of this session, "Influence of Changes in Carbide Concentration on X-Ray Structure of Some Pure Iron-Carbon Alloys," Dr. W. L. Fink, Aluminum Co. of America, Cleveland, described an exceeding technical research in which he has done considerable work. His results gave further light on the change from alpha to gamma iron and furnished additional data on the nature of martensite. Before proceeding with the discussion of the investigation, the author described briefly the technique of the X-ray and its use in the study of metals, numerous lantern slides demonstrating the underlying principles. Additional lantern slides showed X-ray photographs. Dr. Fink's paper was commented upon briefly by E. C. Bain, Carbide & Carbide Research Laboratories, Long Island City, N.

Y., who also showed several slides.

In concluding this session, Prof. H. M. Boylston, head of department of mining and metallurgy, Case School of Applied Science, Cleveland, and chairman of the society's publication committee, pointed out that the morning's program had afforded excellent examples of two types of paper. Mr. Will's paper was a practical type which was easily understood and Dr. Fink's work was of an extremely technical type which required considerable background and study for a complete understanding. In the *Transactions* of the society an attempt is made to provide matter which is comprehensible to members and which has a direct application to heat treating problems. Professor Boylston stated that a survey of the last year's *Transactions* showed 55 per cent of the articles to be of a practical nature, 29 per cent of a technical nature and 16 per cent semi-practical and semi-technical. He said that it is difficult to draw the line too sharply for what may appear technical today may be practical tomorrow.

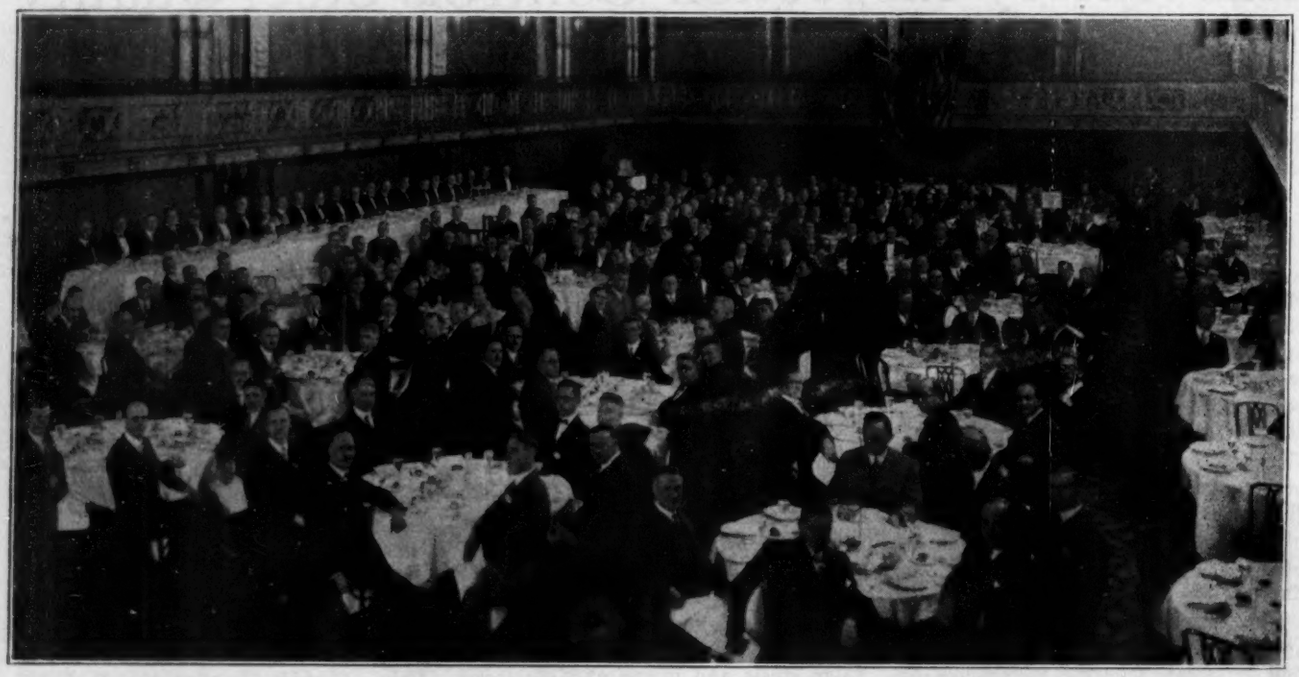
Quenching Rate Is Affected by Size of Work

WITH two excellent technical papers presented, the Friday morning session was notable and may well be regarded as one of the best ever conducted by the society and not excepting national conventions. Notwithstanding the fact that both papers were of extremely technical nature, a considerable interest was shown in the subjects and much discussion was provoked. H. J. French and O. Z. Klopsch, bureau of standards, Washington, were the authors of the first paper, "A Report Supplementing Work Relating to the Effect of Size and Shape on the Hardening of Steels," the presentation being made by Mr. French. These two investigators previously have completed and published considerable data on the subject, consequently the current work was reviewed as a progress report on one phase of the research, "Characteristics of Quenching Curves."

The purpose of this series of tests was to develop curves for quenching specimens in different quenching mediums so that the effect of mass could be determined. Specimens consisted of steel spheres, cylinders and plates with thermocouples inserted to the center of the mass. Mr. French explained that special apparatus was employed by which the specimens could be heated to desired temperatures in a vertical electric furnace and suddenly dropped through into the quenching medium which could be held stationary or rotated to hasten cooling. The time for the temperature drop was measured. Curiously enough it was found that certain formulas for time of cooling worked out in previous experiments held good for small specimens, but for larger specimens a time lag was discovered, indicating that the rate of cooling from the surface to the center of the mass was retarded. From data obtained, a modified formula for time of cooling was worked out and checked and curves were prepared. These curves were shown on lantern slides and were for water, oil and air quenching under certain standard conditions.

R. S. Archer, Aluminum Co. of America, Cleveland, in discussing this paper, reported that he had found the cooling rates of aluminum castings to vary according to weather conditions. He said that he supposed Mr. French's experiments had for their objective the development of data to predict the results of heat treating. This being true he questioned the practicability of the work when satisfactory impirical results could be obtained much more easily. In reply, Mr. French stated that the primary purpose of the research was to study coolants and that data pertaining to the prediction of heat treating was of secondary importance. In reply to a question, the speaker said that the plating of specimens with copper, nickel or gold affected the cooling curves.

"On the Nature of Alloys of Iron and Chromium," was the title of an exceedingly interesting paper read by E. C. Bain, metallurgist, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y. This research, which developed some new theories in metallurgy was published in the January issue of *Transactions* of the American Society of Steel Treating. For the first time, it is believed the au-



Over 300 attended the banquet which was served at the Hotel Statler on Thursday evening

thor developed and preserved at room temperature the delta iron solid solution. In alloys heated above the range for austenite formation and quenched in water, the transformation to austenite was suppressed and the delta iron solid solution preserved unchanged in a permanently stable form identical with alpha iron solid solution, or ferrite. The term delta iron infers only that the material was heated to a temperature above the austenite range. Physically, delta and alpha iron are identical.

According to Mr. Bain, solid solutions of chromium in iron containing less than about 14 per cent chromium exhibit the alpha-gamma and gamma-delta transformations upon heatings. With increasing chromium content, the alpha-gamma transition is raised and the gamma-delta change lowered. In alloys above 14 per cent chromium, alpha and delta iron solid solutions are continuous and identical. By quenching, delta iron solid solutions have been preserved permanently at room temperature. In concluding, the speaker pointed out that his investigation was substantiated by a paper to be presented at the February meeting of the American Institute of Mining and Metallurgical Engineers by W. P. Sykes, Cleveland wire division, National Lamp Works, Cleveland. Mr. Sykes developed the delta iron formation in iron-tungsten alloys. Although the two investigators conducted their researches independently, they exchanged confidences.

Pays Tribute to Author

Dr. Zay Jeffries, Aluminum Co. of America, Cleveland, in a written discussion read by R. T. Bayless, editor of *Transactions* highly commended the work of Mr. Bain and hailed the discovery of delta iron as of considerable importance in metallurgy. He also said it was significant that similar results had been secured by two investigations and said the presentation of Mr. Sykes' paper would be awaited with extreme interest. J. V. Emmons, Cleveland Twist Drill Co., Cleveland, stated that in 1914 work on 0.40-0.50 per cent carbon tool steel showed a new constituent, which for lack of better identification was called "Constituent X." He believed it might have been delta iron. Mr. Sykes, however, who had declined to discuss his future paper or make remarks on Mr. Bain's, doubted whether Mr. Emmons had obtained delta iron in steel containing carbon as high as 0.40-0.50 per cent. Dr. John A. Mathews, Crucible Steel Co. of America, New York, suggested that raising the steel to near the melting point might have lowered the carbon content and made delta iron possible.

Electric Furnace in Use for Quarter Century

MANUFACTURE of steel by the electric furnace method was discussed at length in a paper, "Electric Steel Melting from the Metallurgist's Viewpoint," presented at the Friday evening session by Dr. Birger Egeberg, Halcomb Steel Co., Syracuse, N. Y. The electric furnace was first developed in 1900 and found application in the manufacture of alloy structural steels, which because of their quality and quantity desired could be produced economically by the electric method. Alloy steels now are 25 years old and their progress has been rapid because of the electric furnace. The furnace also is used widely to recover from scrap valuable alloys which would be lost by the open-hearth process. Dr. Egeberg discussed at length deoxidizing practice and mentioned the advantages of the furnace for desulphurizing. In closing, he said there still was much to be learned concerning the electric processs, pointing out that seemingly identical charges melted down under seemingly identical conditions, do not always give identical steels.

Following this paper, H. M. German, Universal Steel Co., Bridgville, Pa., reviewed briefly commercial practice in the manufacture of quality alloy steels by the electric furnace method. He said that extreme care is employed in watching oxidation and frequently tapping is accomplished through a tube inserted in the spout of the furnace.

Wider use of the macroscopic study of iron and steel was urged by J. J. Curran, metallurgist, Henry Souther Engineering Co., Hartford, Conn., in a paper, "Macroscopic Examination of Iron and Steel." The speaker stated that specimens could be sawed apart, given a hot etch and studied with the naked eye. In most cases where material has failed the defects causing failure can be located without extensive methods of microscopic analysis. With lantern slides Mr. Curran showed a number of macroscopic tests in which the defects and strain lines were plainly visible. Dirt and other inclusions were brought into relief.

Inclusions Are Not Dirt

In discussing this paper, G. F. Comstock, Titanium Alloy Mfg. Co., Niagara Falls, N. Y., objected to inclusions being classified as dirt as a result of macroscopic examination. He stated that in many cases it was not dirt and that its exact nature could be determined only by micrographic study. Dr. John A. Mathews, Crucible Steel Co. of America, New York, said that considerable experience is necessary for intelligent interpretation of macrophotographs and recommended that this method of testing be used only in conjunction with the microscope. Prof. H. M. Boylston, Case School of Applied Science, Cleveland, concurred with Dr. Mathews.

On Thursday evening an informal dinner was served in the ballroom of the Statler hotel and was well attended. Special tables were reserved for delegations from the Donner Steel Co., Bethlehem Steel Co., J. H. Williams & Co., all of Buffalo, Atlas Steel Corp., Dunkirk, N. Y., and Simonds Saw & Mfg. Co., Lockport, N. Y. W. T. Buckley, chairman of the convention committee, Buffalo chamber of commerce, presided as toastmaster. In a few brief remarks, R. M. Bird, president of the society, referred to the co-operation between members and assigned that as one reason for the organization's success.

Dr. M. L. Hartman, chief of laboratory, Carborundum Co., Niagara Falls, N. Y., read a short paper on "Research in Industry." Development in a plant, he said, comes from suggestions of workers and occasionally the genius. There comes a time, however, when outside influence is necessary to prevent stagnation and that is the purpose of industrial scientific research. Industry always is slow to acquire the new, but he pointed out it would be better off if it were more critical of today's methods and more sympathetic of what may be tomorrow's. A production plant is a poor place to try out new ideas, consequently, the research laboratory is fully justified.

W. H. Cutler, chief metallurgist, Lackawanna plant of the Bethlehem Steel Co., urged the society to be always on the alert in the application of steel to new uses. His remarks were prompted by recent reports that aluminum and other alloys were being developed to replace iron and steel. Other speakers on the banquet program were: A. F. Dohn, president Atlas Steel Corp., Dunkirk, N. Y.; Arthur Nutt, chief engineer, Curtiss Aeroplane & Motor Co., Buffalo; Prof. W. Z. Irons, University of Buffalo, Buffalo; and W. H. Eisenman, nation-

al secretary of the steel treating society.

Unusual opportunity in the way of plant visitations was provided at the Buffalo meeting. Plants which opened their doors to the visitors were: Donner Steel Co.; Curtiss Aeroplane & Motor Co.; Bethlehem Steel Co.; Pierce-Arrow Motor Car Co., American Brass Co., Simonds Saw & Steel Co., Lockport, N. Y.; Atlas Steel Corp., Dunkirk, N. Y.; Niagara Falls Power Co., Niagara Falls, N. Y.; and Carborundum Co., Niagara Falls, N. Y.

Judge E. H. Gary, chairman of the board, United States Steel Corp., and Charles M. Schwab, chairman of the board, Bethlehem Steel Corp., were elected to honorary membership in the American Society for Steel Treating at the all-day session which was held on the day preceding the opening of the sectional meeting. The conferring of these honors on Judge Gary and Mr. Schwab will be one of the features of the banquet at the Chicago convention, Sept. 20-24.

An unaudited financial statement submitted by Dr. Zay Jeffries, treasurer, showed the society's excess over income in 1925 to be approximately $25,000, thus increasing total resources to over $88,000. A budget calling for the expenditure of $147,000 was approved. Expenditures in the past year were about $115,000. Action was taken increasing the Henry Marion Howe Medal Fund from $3000 to $5000.

Seeking National Convention

Selection of the Drake hotel as the official hotel for the Chicago convention was approved. The Society of Automotive Engineers was invited to hold its production meeting in Chicago during the steel show and convention and a similar invitation was extended to the machine shop practice division of the American Society of Mechanical Engineers. The Philadelphia and New York chapters of the society have invited the board of directors to hold the 1927 convention and exposition in their respective cities. A committee was appointed to investigate and report at Hartford.

President Bird retired from the joint committee on heat treatment definitions of the Society of Automotive Engineers, American Society for Testing Materials and American Society for Steel Treating, and Bradley Stoughton, head of department of metallurgy, Lehigh university, was appointed in his place. Mr. Bird submitted a plan calling for his visiting all of the chapters during the year and holding conferences with their executive committees. The board was presented with a list of 24 cities which appear as new chapter prospects. Further investigation on these cities will be conducted.

The national office was instructed to secure data on the metallurgical courses of universities, technical schools, trade schools, correspondence schools, etc., the information to be used in connection with the metallurgical educational extension activities.

Clarifies Blast Furnace Capacity

STRIKING out upon similar lines as the statistical revision committee of the American Iron and Steel institute, the Southern Ohio Pig Iron and Coke association has adopted an additional formula for calculating the annual producing capacity for a blast furnace. In fact, the Southern Ohio association's formula supplements and clarifies the institute dictum.

The rule recommended by the Southern Ohio association's committee on furnace rating, and adopted by the association at its meeting at Ashland, Ky., Wednesday, Jan. 20, follows:

"The annual capacity which each stack should produce should be figured by multiplying the daily rated capacity as determined by the Southern Ohio Pig Iron and Coke association formula for the grade of iron regularly produced, by 350 operating days." This "daily rated capacity" formula may be stated briefly as providing for the consumption of 60 pounds of coke of a standard specification per 24 hours per cubic foot of stack working capacity.

Computes Operating Time

The committee notes that it arrives at the number of 350 operating days as an average of operating days of each year for full time operation. The estimate is offered that the stack lining should last four years and that it should require 60 days for relining and other general repairs. This 60 days' period, divided by 4 gives 15 days per year, which, taken from 365, would give 350 as the average number of operating days expected for full time operation.

Two principal papers presented during the afternoon session, which was held in the offices of the American Rolling Mill Co. at Ashland, and presided over by President R. H. Sweetser, were presented by H. A. Berg, vice president of Arthur G. McKee & Co., Cleveland; and by E. F. duBrul, general manager of the National Machine Tool Builders' association, Cincinnati. Mr. Berg's carefully prepared and highly interesting paper dealt with many of the complicated factors entering into the original calculation of stack producing capacity, including length of the life of a stack lining, etc. One important feature has been the improvement in furnace practice which permits today the production of an average daily stack output of 700 tons, whereas not so many years ago 500 to 600 tons was the maximum. It is known that a furnace has run on one lining to a production of 1,400,000 tons of pig iron; and it is rumored but not confirmed that a certain stack has done 1,700,000 tons before requiring relining. Which raised the question by one furnaceman present: "Who will be the first to reach the 2,000,000-ton mark with one lining?" The speaker pointed out the average lining ought to last four years, ought to take six to eight weeks for relining, giving an average of 350 operating days per year.

Mr. duBrul with three charts gave an interesting study of economic factors making up a business forecaster by which many business men today are guided, especially members of the association. Readers of IRON TRADE REVIEW are somewhat familiar with Mr. duBrul's material. In his Ashland talk, he made it clear the forecaster indicated, based upon November's figures, a straightening out in the curve which might prove a period of hesitation just before it turned either upward or downward finally.

Would Form New Chapter

Charles R. Peebles, secreary-treasurer of the Southern Ohio association, presented an interesting study of the blast furnace statistics presented in the Jan. 7 Annual Number of the IRON TRADE REVIEW, which called forth interesting discussion.

The principal address of the evening session was made by H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers. It is the endeavor of the institute to build up a chapter which will include members especially from northwestern West Virginia and northeastern Kenucky. This the Southern Ohio association is trying to and in every way possible.

Form Reinforcing Steel Institute on Coast

Berkeley, Calif., Jan. 26.—Organization of the Reinforcing Steel institute of California was one of the features of the second annual convention of the iron, steel and allied industries of this state in Del Monte, Jan. 21-23. This is one of the constructive results of the conferences intended to promote the interests of Pacific coast industries. Ten companies joined the institute, which was represented in the convention by its treasurer, C. Luis Meyer. E. L. Soule is president of the organization.

Addresses by W. E. Creed, president of the Columbia Steel Corp., and the Pacific Gas & Electric Co.; Chester H. Rowell, former editor, *Fresno Republican*, and Maynard McFie, chairman of the state conference, were high lights of the meeting. Creed said that American capital is being used by European steel and power companies to improve their production to compete more effectively in American markets. He urged a reduction in labor costs in American industry. Rowell favored giving technical experts equal authority with financial representatives, as in Europe, which he said is one of the reasons foreign steel competition is formidable. McFie traced the work of the steel conferences. He urged still greater co-operation, and advocated a readjustment of freight rates to aid Pacific coast industries to expand.

It was announced that the American Institute of Steel Construction was requested to open an office on the Pacific coast. The conference elected McFie as chairman, J. D. Fenstermacher, vice chairman, and Charles Knight, San Francisco, secretary for the ensuing year.

Power Engineers Confer in Chicago Meeting

Chicago, Jan. 26.—More than 300 manufacturers of machinery and equipment were represented when the Midwestern Engineering Exposition and Power conference was officially opened today by Secretary of Commerce Hoover. A button, pressed by Secretary Hoover in his office at Washington, sounded an electric gong and the 5-day combined exposition and conference was on.

Many of the exhibits, utilizing the 60,000 square feet of floor space available in the American exposition palace, 666 Lake Shore drive, show equipment in operation. Parallel to the show is the first Midwest Power conference, whose sessions were inaugurated this afternoon by Samuel Insull, Chicago, speaking on power developments in the Mississippi basin.

A score of speakers, related chiefly to the power field, will discuss power resources and their most beneficial application to industry. Samuel Vauclain, Baldwin Locomotive Works, Philadelphia, is scheduled to talk Friday afternoon on the development of the diesel-electric locomotive. Large power plants in and near Chicago will be inspected Thursday and Friday. Many of the addresses are to be broadcast. Six national engineering societies are sponsoring the exposition.

Will Liquidate Hunter Crucible Steel Co.

Arrangements have been completed whereby F. H. Crawford & Co., Inc., 299 Broadway, New York, will conduct immediate liquidation of all equipment of the former Hunter Crucible Steel Co., Cleveland, owned by Western Reserve Steel Co. The Hunter plant is located near Cuyahoga Heights, and contains a 30-pot crucible melting furnace, a 6-ton heroult type electric melting furnace, a 10-inch merchant mill, and a number of steam hammers from 800 pounds up to 6 tons. Accessory equipment includes cranes, heating furnaces, annealing furnaces, straightening machines, shears, etc. The plant was built in 1916 and 1917 under the original name of the Crucible Steel Forge Co. It was acquired in 1918 by the Electric Steel & Forge Co. and later by the present interest. It has not been active for several years.

Born with Malleable Firm Celebrates Centenary

In celebration of the one-hundredth anniversary of the founding of its business, the Barlow Foundry Co., Newark, N. J., will give a dinner at the Washington restaurant, that city, Jan. 29. The event also marks the one-hundredth anniversary of the discovery of malleable iron which was responsible for the origin of the Barlow company. The history of the company begins with Seth Boyden, a harness manufacturer of Newark. Mr. Boyden experimented for six years in an effort to produce an ideal iron for his harness hardware. In 1826 he located a foundry at 28 Orange street, Newark, and cast his first heat of malleable iron there on July 4, of that year. This achievement the citizens of Newark commemorated by erecting an attractive statue of Mr. Boyden in one of the public parks of the city. Until 1914, malleable iron continued to be cast in the building. In that year the old plant was abandoned and the Barlow Foundry Co. moved into a fine new plant in the Waverly section of Newark. On abandoning the old building, the Barlow company also gave up the production of malleable. The present plant is devoted entirely to production of gray iron. In the last 12 years, the plant has been greatly expanded, and the company has increased its machine molding operations.

Officers and directors of the company are: President, Walter Kidde; vice president, Samuel F. Dixon; treasurer, Arthur E. Barlow; general manager, John L. Carter. Other directors are William Fellowes Morgan and Joseph M. Perrine.

1925 Automobile Output Shows Big Gain

Washington, Jan. 26.—December production of motor vehicles was 285,198 passenger cars and 34,270 trucks, according to the department of commerce. Of these numbers 277,700 passenger cars and 32,542 trucks were made in the United States and 7498 passenger cars and 1728 trucks was 3,817,638 compared with 3,262,764 in 1924, an increase of 17 per cent. Truck output in the United States and Canada in 1925 was 496,998 and it compares with 377,344 in 1924, a gain of 31 per cent.

Total output of cars and trucks in 1925 was 4,325,000 compared with 3,640,000 cars and trucks in 1924. The previous peak for all time was in 1923 when 4,086,000 cars and trucks were manufactured. Many automobile companies have expanded producing facilities and are prepared to increase production in 1926, if demand justifies.

Passenger Cars

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	84,189	228,860	293,822	212,908
Feb.	112,755	260,320	343,444	252,785
March	157,839	327,038	357,006	332,151
April	202,567	351,622	346,355	391,802
May	238,462	358,646	286,266	382,714
June	268,501	343,985	225,034	364,806
July	228,456	303,497	244,503	358,554
Aug.	252,795	318,848	255,193	221,813
Sept.	190,867	302,340	263,468	272,413
Oct.	219,919	338,469	260,845	406,569
Nov.	217,953	288,810	204,316	336,358
Dec.	210,692	279,862	182,028	285,198
Total	2,384,999	3,702,297	3,262,280	3,817,638

Trucks

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	10,005	20,506	30,627	28,141
Feb.	13,853	23,283	32,756	34,410
March	20,631	36,619	36,270	45,098
April	23,429	39,641	37,766	47,822
May	24,880	45,677	35,112	43,303
June	26,962	42,453	28,884	38,054
July	22,507	31,703	26,227	41,840
Aug.	25,273	32,195	28,503	37,770
Sept.	19,905	29,626	31,829	60,374
Oct.	22,446	31,515	32,332	45,823
Nov.	22,522	29,166	27,766	39,995
Dec.	20,911	28,862	27,324	34,270
Total	253,324	391,246	375,426	496,998

News of Societies

AT THE meeting of the American Engineering council in the Mayflower hotel, Washington, Jan. 13-15, the assembly adopted recommendations of the administrative board declaring it "the sense of the American Engineering council that the government should not trespass upon the field of industry unless it can be satisfactorily shown that the government can better engage in that business than can private enterprise." This was in keeping with the approval given to the proposed Jones-Wyant bill to change the name of the department of the interior to the department of public works and domain, and with the plans made to reduce industrial wastes.

Election of officers was held, and Dean D. S. Kimball, Cornell university, Ithaca, N. Y., chosen president. Other officers elected were: Vice presidents, S. Williams, Ann Arbor, Mich., re-elected, and I. E. Moultrop, Boston; Dr. H. E. Howe, Washington, re-elected treasurer, and L. N. Wallace, Washington, re-elected executive secretary. Chief speakers at the annual dinner at the Chevy Chase club Jan. 14 were Hubert Work, secretary of the interior, and D. R. Crissinger, governor of the Federal Reserve board.

* * *

To Meet in New England

More than 1000 engineers are expected to gather in Providence, R. I., for the New England regional meeting of the American Society of Mechanical Engineers on May 3-6. Representatives of the society have met with the Brown university faculty and other Providence engineers to arrange the program, which will include discussions of machine shop practice, and industrial and central station power problems.

* * *

Electrical Engineers to Meet

The midwinter convention of the American Institute of Electrical Engineers will be held in the Engineering Societies building, 29 West Thirty-ninth street, New York, Feb. 8-11. "Temperature Rise and Losses in Structural Steel Members Exposed to the Fields from Alternating Current Conductors" is the title of a paper by O. R. Schurig and H. P. Kuehni, General Electric Co., to be presented Tuesday morning, Feb. 8. A. D. Keene and G. E. Luke, Westinghouse Electric & Mfg. Co., will present a paper on "Rating of Heating Elements for Electric Furnaces" Thursday afternoon.

* * *

Blast Furnace Men To Meet

Three papers will be presented at the all-day session of the Eastern States Blast Furnace and Coke Oven association, to be held in Pittsburgh Feb. 12. "Effect of the Physical Properties of Ore and Coke on the Capacity of the Blast Furnace," is the title of a paper prepared by Messrs. Joseph, Royster and Kinney, bureau of mines, Pittsburgh. Dan Rugg, Koppers Co., Pittsburgh, will read a paper on "An Experience in Serving Two Groups of Blast Furnaces with a Single Coke Plant." B. W. Winship, superintendent, Steelton works, Bethlehem Steel Co., will present his paper on "Selective Segregation of Coking Coal at the Mine and Its Preparation at the Ovens."

* * *

Exposition Program Is Broad

The technical program for the second chemical equipment, machinery and process engineering exposition of the Association of Chemical Equipment Manufacturers, to be held May 10-15 in the Public auditorium, Cleveland, is being prepared by a special committee which includes members of several other national societies. C. B. Murray, secretary of the Ohio section of American Institute of Mining and Metallurgical Engineers, J. Rowland Brown and James H. Herron, American Society of Mechanical Engineers, and W. H. Eisenman, secretary, American Society for Steel Treating, will assist in arranging the program which is intended "to reflect the inter-relation of the chemical, civil, electrical, metallurgical, heating and ventilating, welding, testing materials, mechanical and industrial engineers."

Technical sessions are scheduled for Monday, May 10, in the Hotel Hollenden, and will deal with such subjects as the electrochemical processes, ferrous and nonferrous alloys, materials of construction, and problems of mechanical design.

Convention Calendar

Feb. 5—Taylor society. Joint meeting with American Society of Mechanical Engineers and New York Railway club. Engineering Societies building, New York. H. S. Person, 29 West Thirty-ninth street, New York, managing director.

Feb. 12—Eastern States Blast Furnace and Coke Oven association. Meeting in Pittsburgh. Charles R. Meissner, Weirton, W. Va., secretary.

Feb. 15-17—American Institute of Mining and Metallurgical Engineers. Annual meeting Engineering Societies building, New York. Dr. H. Foster Bain, 29 West Thirty-ninth street, New York, secretary.

March 3-5—American Management association. Annual convention at Hotel Astor, New York. H. LeRoy Neilson, Delco Light Co., Dayton, O., secretary.

April 22-24—American Electrochemical society. Meeting, Chicago Page hotel, Chicago. Colin G. Fink, Columbia university, New York, secretary.

April 28-30—National Foreign Trade council. Thirteenth annual convention, Francis Marion hotel, Charleston, S. C. O. K. Davis, India house, 1 Hanover square, New York, secretary.

May 3-6—American Society of Mechanical Engineers. New England regional meeting, Providence, R. I. Calvin W. Rice, 29 West Thirty-ninth street, New York, secretary.

May 10-15—Association of Chemical Equipment Manufacturers, Inc. Second chemical equipment and process engineering exposition, Public hall, Cleveland. Roberts Everett, 1328 Broadway, New York, secretary.

May 20-21—American Society for Steel Treating. Spring sectional meeting, Hotel Bond, Hartford, Conn. W. H. Eisenman, 4600 Prospect avenue, Cleveland, secretary.

Wins 1925 Fritz Medal

Award of the 1925 John Fritz engineering gold medal to Edward Dean Adams, New York, has been announced by the Engineering Foundation. The award, said to be the highest honor attainable in the engineering profession, was established in 1902 in honor of John Fritz, pioneer in American iron and steel industry. The announcement honors Mr. Adams as "an engineer, financier and scientist whose vision, courage and industry made possible the birth at Niagara Falls of hydroelectric power."

Mr. Adams graduated from Norwich university in 1864 and afterward studied at Massachusetts Institute of Technology. He has been a fellow of American Society of Civil Engineers since 1891, an associate of American Institute of Electrical Engineers since 1910, vice chairman of Engineering Foundation from its beginning, and is a member and officer of the Engineering Societies' library.

Carnegie Enters Texas

Austin, Texas, Jan. 26.—The secretary of state has granted to the Carnegie Steel Co. of Pittsburgh a permit to do business in Texas. The capital stock of the company is $65,250,000. The permit provides that the company shall maintain principal office in Texas at Galveston and a branch establishment in Houston. C. L. Gillespie, Houston, is named state agent. Mr. Gillespie is now in New York. The company plans to establish warehouses in Galveston and Houston where fabrication work will be done.

British Railrods To Use Domestic Steel

(*Concluded from Page* 297)

tained at short notice. Against this quick delivery foreigners are falling further into arrears.

A good deal of public attention has been given to the announcement by the railways that they purpose wholly excluding foreign steel in the execution of their contracts. This is not a new development, but the more definite statement is obviously intended as a warning to the rerollers of foreign steel. Undoubtedly, in the past many buyers from rerollers have assumed that because the steel came from British works it was necessarily home-made which was very far from the fact

A peculiar development of the rise in continental steel has been the placing by many Midland rerollers of orders for billets, blooms, slabs, etc., running into many thousands of tons. In most cases, they pay from 2s ($0.40) to 3s ($0.71) more on the new contracts than on those expiring and it is well recognized that a good deal of time must elapse before deliveries can be given, but there is still sufficient margin between the British and foreign price to offer a certain advantage to rerollers, tube-makers and others. The British steelmaker in the presence of this competition and the increased keenness shown by Germany for British business, will not advance prices, except under keen necessity, or much larger business than is in sight at present.

In the galvanized sheet trade, big contracts are not forthcoming, but there is sufficient booking to prevent any anxiety as to the future. Prominent among recent buyers are the Malay States, the Dutch East Indies and the Far East generally. The market is not quite so strong as it was, a somewhat larger proportion of business being accepted at £16 10s ($80.02) although £16 12s 6d ($80.62) is named as a basis. The demand for black sheets and tinned sheets is fairly maintained, and is expected to increase as the motor and cycle trades get into their stride, while a variety of stamping industries will require a good deal of material.

German Industry Meets Reverses

BERLIN, Jan. 29.—(*European Staff Service*) The pig iron union has decided to maintain the same conditions and prices through January as in December. At a recent meet- of the hematite union of Siegerland, it was stated that November sales decreased considerably; but no change was effected in prices. The wire product union is formed for five years and will have its head office in Dusseldorf. A union has been formed with the object of controlling the production of galvanized sheets and bands. The head office will be in Dusseldorf.

A number of iron and steel concerns have recently held their annual general meeting covering the financial year 1924-25. The Hannoverschе Maschinenbau Gesellschaft has suffered from the lack of orders for locomotives. This firm has intensified its production of boilers and agricultural tractors but has had to meet keen American competition on the latter. The firm has also manufactured and sold in Germany about 1000 light automobiles. The net profit was only 182,902 marks ($43,500). The German Babcock & Wilcox company has registered a net profit of 513,663 marks ($122,000) and distributed a dividend of 6 per cent, as against 5 per cent for the preceding year.

The Rombacher Huttenwerke has registered an unprofitable year and the total loss amounts to 19,246,000 marks ($4,560,000), reserves being 5,085,000 marks ($1,205,000). The company obtained a loan of £300,000 ($1,455,000) from Great Britain. During the year under review the plant produced 56,915 metric tons of pig iron and 147,747 tons of steel. The Aktien-Gesellschaft Charlottenhutte has registered a net profit of 864,612 marks ($206,000) and has declared a dividend of 5 per cent on ordinary shares, as against 10 per cent for the preceding year, and 6 per cent on other stock. The Rheinische Stahlwerke made a net profit of 350,000 marks ($83,000) which was carried forward. The Rheinische Metallwaren und Maschinenfabrik held its meeting Jan. 6. It was stated that the plant was occupied by French troops until August, 1925. No new orders have been received from the railroads and this has caused the curtailment of production of several departments and a loss of 6,848,298 marks ($1,630,000). It was decided to reduce the capital from 18 million to 6 million marks ($4,290,000 to $1,430,000).

It is reported that the assets of the Aktien-Gesellschaft fur Automobilbau, known as the AGA and which was controlled by Dr. Edmund Stinnes, amount to 1,700,000 marks ($4,050,000). as against liabilities amounting to 17 million marks ($40,500,000). However, the assets would be increased through the collection of claims against the past board of directors, and creditors might expect a return of about 25 per cent. For the time being, the plant is idle.

Belgian Steel Dominated by French

BRUSSELS, Jan. 20—(*European Staff Service*)—Belgian iron and steel makers are closely following developments in France. The French have dominated the market since the franc fell to recent low levels, with the result that Belgian manufacturers are finding it difficult to meet French competition on export business. Moreover, buyers anticipate lower prices in Belgium for the reasons outlined above and due to the fact that mills in the Charleroi district are expected to re-enter the market. These mills have been closed for several months on account of labor troubles. German competition is also being felt, especially on inquiries from London merchant houses.

Prices were maintained at the last meeting of the Bourse. The volume of business transacted was light. Foundry pig iron, 2.5 to 3 per cent silicon is stationary at 320 francs ($14.60) per metric ton for domestic consumption. On export business furnaces quote the same price f.o.b. Antwerp as this figure is on a parity with offers made by Luxemburg firms.

Franc 4.55c

French competition is not so keen on this product as formerly.

Semifinished steel makers are booked far ahead and practically all have withdrawn from the market. Demand from England is unusually brisk, but buyers are finding it practically impossible to obtain tonnage. Published prices are only nominal and have no real significance. Lorraine mills have no tonnage to offer and Luxemburg manufacturers are holding out for higher prices than exporters are yet willing to pay.

Merchant bars are quoted at £5 6s 6d ($25.90) f.o.b. Antwerp. Luxemburgers are trying to obtain £5 7s ($26) but have made concessions to meet Belgian prices on attractive specifications. Lorraine mills are busy with domestic orders which have been pouring in since the franc began to decline. Structural shapes, normal profiles, are quoted at £4 17s 6d ($23.60) f.o.b. Antwerp. Plates are dull despite the low prices named on export inquiries. Plates 3/16-inch thick are quoted as low as £5 7s 6d ($26.10) per metric ton f.o.b. Antwerp. Rods are being done around £5 15s ($27.90). Pipe sales have fallen off but mills have well filled order books to keep them busy for at least two months. The Usines a Tubes de Jemappes expects to be ready to start its new butt-weld unit in April, with a capacity of 1500 tons per month.

Building trades report a dull market. Fabricating shops are working short time. Automobile builders are encountering keen competition, especially from America. The cheaper American cars have made heavy inroads on the Belgian market.

During November 32 blast furnaces were blowing in Belgium and 22 stacks were idle. Pig iron production during November amounted to 168,760 tons, compared with 174,270 tons during October. Steel production fell from 164,879 tons in October to 150,540 tons in November. Production of finished steel during November was 128,960 tons.

Pig Iron Rate Cuts Extended

Lower Tariffs Filed From Points in Ohio to West Virginia, Indiana and Michigan, Following Reductions Within Ohio—Barge Line Competition a Factor—Billet Transportation Charge Also Reduced

WASHINGTON, Jan. 26.—Following the recent cut in pig iron rates in Ohio, extension of tariffs calling for reductions in interstate rates, in line with the Ohio schedules, are being filed.

The New York Central and the Wheeling & Lake Erie railroads have filed tariffs with the interstate commerce commission naming rates from Toledo, Lorain, Cleveland and other northern furnace points to destinations in Ohio, northern Indiana and as far south as Wheeling as well as to points in Michigan, including Alpena and Cheboygan.

A New York Central tariff, cutting rates from Toledo, became effective Jan. 17, which the commission had declined to suspend. A Wheeling & Lake Erie tariff, effective Feb. 10, reduced rates from Canton, Cleveland, Massillon, Lorain, Toledo, Steubenville and Zanesville, O., and Wheeling, W. Va., to points in Ohio, Indiana, Illinois, Kentucky, Michigan, Pennsylvania, and Wisconsin.

Other Central Freight association territory lines raised strong objections to these rate reductions, which may have come about as the result of the recent lowering of pig iron rates made by the Chesapeake & Ohio and Norfolk & Western railroads from Ironton and other points in the southern Ohio furnace group to Louisville and points along the Ohio river in Indiana. Barge line competition was the leading factor in the latter rate cuts. The Louisville & Nashville and the Southern railroads sought to have the commission suspend the latter rates, asserting that one of the purposes of the recent revision of pig iron rates from southern producing points to the Ohio river would be defeated if the schedules became effective.

Other Central Freight association lines are expected to follow the New York Central and the Wheeling & Lake Erie. The following are typical of the reductions in gross-ton pig iron rates from Toledo and group points by the New York Central:

To	New	Old
Laporte,, Ind.	$2.65	$2.90
Goshen, Ind.	2.50	2.65
Greencastle, Ind.	3.28	3.65
Willard, O.	1.76	2.02

Northern furnaces claimed they would be at a disadvantage in the markets in central and southern Ohio and adjoining states if these latter rates were allowed to stand.

The following are typical of the gross ton pig iron rate reductions of the Wheeling & Lake Erie:

From	New	Old
Cleveland and Lorain to Ashland, O.	$1.76	$2.02
Massillon to Ashland, O.	1.76	2.27
Canton, Cleveland, Massillon and Lorain to Columbia City, Ind.	3.15	3.78
Canton, Cleveland, Massillon and Lorain to Crawfordsville, Ind.	3.53	4.41
Canton, Cleveland, Massillon and Lorain to Creston, O.	1.64	1.76
Toledo to Creston, O.	1.76	2.27
Canton, Cleveland, Massillon and Lorain to Crestline, O.	1.76	2.27
Toledo to Crestline, O.	1.76	2.02
Canton, Cleveland, Massillon, Lorain and Toledo to Delaware, O.	2.10	2.27
Canton to Elkhart, Ind.	3.26	4.41
Massillon to Elkhart, Ind.	3.26	4.40
Cleveland to Elkhart, Ind.	3.15	4.30
Lorain to Elkhart, Ind.	3.15	4.20
Toledo to Elkhart, Ind.	2.50	2.65
Wheeling and Steubenville to Frederic, Mich.	6.10	6.43
Cleveland to Frederic, Mich.	5.40	5.54
Canton, Cleveland, Massillon and Lorain to Indianapolis	3.15	3.53
Cleveland to South Bend, Ind.	3.28	4.40
Lorain to South Bend, Ind.	3.28	4.41
Canton to South Bend, Ind.	3.28	4.20
Toledo to South Bend, Ind.	2.65	2.90

Chances made by the Wheeling & Lake Erie in gross-ton rates on billets to points in Michigan are shown in the following table:

From	New	Old
Steubenville and Wheeling to Alpena	6.10	6.43
Zanesville to Alpena	5.70	5.80
Canton to Cheboygan	6.10	6.17
Cleveland to Cheboygan	5.60	6.00
Massillon to Cheboygan	5.80	6.17
Lorain to Cheboygan	5.50	5.90
Steubenville to Cheboygan	6.30	6.70
Toledo to Cheboygan	5.10	5.42

Steel Castings Bookings Continue to Gain

Washington, Jan. 26.—Bookings of steel castings in December totaled 85,397 tons, an increase over November but a drop from December 1924, according to reports of 68 companies to the department of commerce. Total sales in 1925 were 731,743 tons, compared with 772,840 tons in 1924 and 894,780 tons in 1923. Railway specialty bookings in December totaled 43,215 tons compared with 31,993 tons in November. Miscellaneous castings bookings were 42,182 tons in December, a gain over 37,534 tons in November. Further comparisons follow:

	Total net ton	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
1922 totals	812,741	69.6	404,682	408,059
1923 totals	894,780	74.6	386,939	507,841
1923 mo. av.	74,565	74.05	32,245	42,320
1924 totals	772,840	64.1	388,357	384,483
1924 mo. av	64,403	64.1	32,363	37,040
1925				
January	82,922	82.6	40,799	42,123
February	61,535	61.3	27,237	34,298
March	59,508	59.3	21,670	37,838
April	59,008	58.8	22,109	36,899
May	49,619	49.4	16,055	33,564
June	48,413	48.2	16,675	31,738
July	54,474	54.2	19,953	34,521
August	51,358	51.2	18,235	33,123
September	48,827	48.6	17,008	31,819
October	61,044	60.8	20,576	40,468
November	69,527	69.3	31,993	37,534
December	85,397	85.1	43,215	42,182
1925 total	731,743		295,525	436,218
1924 mo. av.	60,978	60.7	24,627	36,351

Structural Steel Sales Higher in December

Washington, Jan. 26.—Computed tonnage of structural shapes placed on fabricators' books in December was 231,470 tons, compared with 246,120 tons in November, according to reports to the department of commerce by 178 fabricators with 255,530 tons monthly capacity. Bookings were at 75 per cent of capacity in December. Total computed bookings were 2,708,400 tons in 1925, the fourth consecutive yearly increase since 1921 when 1,113,000 tons were booked. Following are further data, compiled by the department of commerce:

FABRICATION OF STRUCTURAL STEEL, 1913-1925

Year	Monthly capacity Reported by 232 firms	Monthly capacity Total estimated	Annual bookings Per cent of capacity	Annual bookings Computed tonnage
1913	195,730	210,000	50	1,260,000
1914	196,580	211,000	50	1,266,000
1915	198,890	214,000	70	1,797,600
1916	205,675	222,000	69	1,838,160
1917	213,015	231,000	60	1,663,200
1918	224,700	244,000	56	1,639,680
1919	231,890	252,000	53	1,602,720
1920	238,820	260,000	54	1,684,800
1921	242,645	265,000	35	1,113,000
1922	260,920	284,000	64	2,181,120
1923	260,345	285,000	64	2,188,800
1924	268,345	293,000	69	2,426,040
1925	279,991	305,000	74	2,708,400

1925	Actual tonnage	Per cent of capacity	Computed tonnage	Shipments computed
Jan.	147,557	57	173,850	176,900
Feb.	152,074	58	176,900	189,100
March	179,161	69	210,450	225,700
April	200,528	76	231,800	231,800
May	179,527	68	207,400	234,850
June	224,911	86	262,300	234,850
July	212,687	81	247,050	253,150
Aug.	205,121	78	237,900	247,050
Sept.	212,469	81	247,050	244,000
Oct.	235,574	90	274,500	271,450
Nov.	*186,809	71	216,550	225,700
Dec.	†191,019	75	228,750	240,950
Total (12 mos.)			2,714,500	2,775,500

*Reported by 195 firms with a capacity of 261,445 tons.

†Reported by 178 firms with a capacity of 255,530 tons.

The S. & B. Sheet Metal Works Co., Indianapolis, Ind., has increased its capital from $5000 to $15,000, all of the increase being common stock.

Trade Bodies Probe Arouses Ire

Associations Feel Supreme Court Decision in Maple Flooring and Cement Cases Justifies Their Activities—Federal Trade Commission Acting Under Senate Direction Seeks Intimate Data on Trade Association Price Policies

WASHINGTON, Jan. 26.—Intimate questions regarding activities of trade associations are set forth in questionnaires that have been sent recently to all trade associations of the country by the federal trade commission. These questionnaires have met with some protests on the part of legitimate associations which feel that their powers have been defined clearly by the recent United States Supreme Court decisions and need not be questioned now.

Comparatively few of the trade associations have answered the questions asked by the trade commission, although the time limit on replies was to have expired Jan. 9. Procedure of the commission is based on senate resolution No. 28, passed in the closing days of the last special session of the senate.

Most of the trade associations that have sent in replies, have informed the commission politely that they are not functioning as open price associations. Officials of a number of these associations feel that the questionnaire goes entirely too far and that even the senate resolution did not embrace as much territory as is designed to be covered by these questions.

The commission does not feel that it has gone beyond its authority however although the majority of its members led by Commissioner William E. Humphrey who has sought in the past to maintain constructive relations between the trade commission and business sought an opinion from the department of justice concerning this and other investigations ordered by congressional resolutions.

Attorney General Sargent recently pointed out in an opinion in answer to this request by the trade commission that trade associations or "open price" associations probably are corporations within the meaning of the federal trade commission act "or if not are composed of corporations."

"Doubtless their operations in many important particulars affect interstate trade and commerce" said Attorney General Sargent. "The commission in proceeding under the resolution should not extend its investigation to include matters or things not affecting interstate commerce and consequently having no possible bearing upon alleged violations of the anti-trust acts.

"The resolution calls for an investigation which ought to be of value to congress in considering what legislation if any is required to cope with a new form of business organization, which, while possessing valuable features, has presented many difficult problems under the federal anti-trust laws.

"I am aware that the discussion concerning trade associations has centered about their legality under the anti-trust acts, and that such associations have been the subject of four important decisions of the Supreme Court under those laws. I am of the opinion, therefore, that the investigation called for by resolution No. 28 is appropriate to disclose the existence or nonexistence of alleged violations of the anti-trust acts by corporations as defined in the fourth section of the trade commission act, and should be made."

The statement by the attorney general is taken as a basis by a number of trade association officials for the view that the present procedure in the open price investigation is going beyond its legal authority.

Associations Gather Information

Since the Supereme Court defined the powers of trade associations early last summer, in the cement and maple flooring cases, these associations have proceeded to gather and disseminate information on production costs, stocks and shipments and even on prices when such information is not in danger of acting toward illegal maintenance of prices and suppression of free competition.

Since a guide of principles has been developed by this decision of the Supreme Court, under which trade associations safely can proceed, the associations have been seeking to restrain any tendencies to go too far. No legislation is needed to clarify this decision, it is maintained.

It is generally believed that few, if any, trade associations at present are exchanging price information, and the legitimate associations, now that they have been given a new charter of liberty by the Supreme Court, certainly have nothing to conceal.

The senate resolution passed practically without debate recites that a former report of the federal trade commission discloses the existence of 150 "open price associations," or associations "distributing or exchanging price information." It also is stated that such associations may exert a large influence in maintaining prices at an exorbitant level. The commission is directed to report only the number, names, character, and importance of the open price associations; the extent to which associations have enabled members to maintain uniform prices; whether such open price associations engage in other activities, and if so, the nature and effect thereof "with respect to alleged violations of the anti-trust law." The resolution does not attempt to enforce the return of questionnaires giving intimate details of activities of these legitimate associations.

N. & G. Taylor Co. To Make Improvements

Philadelphia, Jan. 22.—N. & G. Taylor Co. officials deny there is any foundation for a report published in New York newspapers that the company had ordered the indefinite closing down of its open-hearth departments and its bar mills at Cumberland, Md., because the management is able to buy bars cheaper than it can manufacture them. Officials state that the only shutdown is to be in the open-hearth department where operations will be stopped about March 1 to permit of improvements and repairs. The hot mills, tin house, foundry and other departments will continue operating as heretofore. Tin plate production of the company is sold through the first half of 1926 according to H. W. Taylor, president.

Sells Piano Plate Shop

Superior Foundry Co., Cleveland, has sold its piano plate department, one of the smaller portions of the business, and will use the space and facilities to further develop and increase its jobbing business in gray iron and semisteel. The piano plate business has been taken over by the Wickham Piano Plate Co., Springfield, O., and the Paragon Foundries Co., Oregon, Ill.

The Independent Pneumatic Tool Co. reports net income of $864,786 for 1925 after all expenses and reserves for depreciation, taxes and other deductions. This compared with earnings of $720,255 in 1924.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

A FOURTH ore dock at Ashland, Wis., is planned by the Chicago & Northwestern road, according to official reports from headquarters in Chicago. It is to be the largest of its kind on the Great Lakes. The Northwestern recently let contracts for the reconstruction of the old No. 1 dock and completing its electrification at a cost of $375,000. No. 2 and 3 docks were electrified some years ago. The No. 4 dock will require five years to complete. The supply of ore from the Gogebic range, near Ashland, is considered sufficient to outlast the lives of present inhabitants of Ashland and the new dock is planned to take care of an anticipated steady expansion of the ore shipping industry for many years. During the past season the Northwestern docks at Ashland forwarded 4,920,000 tons, or 9.1 per cent of the total shipped from the Lake Superior region.

* * *

LOS ANGELES FOUNDRY CO., Los Angeles, is building a drying unit to dry its molds for a new class of work now being turned out.

* * *

EATON SPRING CORP., Cleveland, has bought the former plant and site of the American Blower Co., Detroit, and will establish a spring manufacturing plant there.

* * *

G H. WILLIAMS CO., Erie, Pa., has booked orders for six 20-ton clamshell buckets, four for Inland Steel Co., Indiana Harbor, Ind., and two for the Carnegie Steel Co., Pittsburgh.

* * *

THE ANDERSON ROTARY AIR CO., Anderson, Ind., reports it will begin manufacturing tire air pumps shortly. The company is said to have orders for 50,000 pumps from one customer in Chicago.

* * *

GEORGE T. TRUNDLE JR., ENGINEERING CO., Cleveland, has elected George T. Trundle Jr. president, John F. Price vice president, H. W. Thompson second vice president, Neola J. Van Sittert treasurer, Alfred M. Corcoran, vice president of the Central National bank, secretary. Carey O. Malpas has been elected a director and will have charge of the department of industrial engineering.

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FANNING-SCHUETT ENGINEERING CO., Philadelphia, has arranged with the Neff & Fry Co., Camden, O., and the Godfrey Conveyor Co., Elkhart, Ind., to represent them as sales engineers.

* * *

INDUSTRIAL WORKS, Bay City, Mich., has shipped a second large coke pusher on order of the Koppers Construction Co., Pittsburgh, for use at its southern plant. The device weighs 600 tons and occupied five freight cars.

* * *

FEDERAL Portland Cement Co., Buffalo, N. Y., a new corporation, H. M. Snyder, 253 Summit avenue, formed by slag-handling concerns, will build its first plant at Buffalo early this year. It is planned to erect plants later at Cleveland and Chicago.

* * *

LINDLEY MORTON, who recently sold his Portland cement plant at North Birmingham, Ala., the Phoenix Portland Cement Co., has taken an option on a site at Birmingham where he plans to build a larger plant. He has a plant in operation at Nazareth, Pa.

* * *

CARBON Alloy Steel Co., Ltd., Niagara Falls, Ont., has bought the plant of the former Electric Steel & Metals Co., Ltd., which has been idle for seven years in the hands of trustees acting for the latter company. It is planned to put the plant in operation in the production of steel.

* * *

BARRETT-CRAVENS CO., 1328 West Monroe street, Chicago, has bought a building at Thirtieth street and Spaulding avenue, containing about 73,000 square feet, the second building the company has bought in three years to accommodate enlarged production of lift trucks, portable elevators and platforms.

* * *

YOUNGSTOWN SHEET & TUBE CO., Youngstown, O., has bought from the Chapman-Stein Furnace Co., Mt. Vernon, O., two additional recuperative ingot-heating furnaces, continuous end charge and side discharge. They will be installed in the new seamless tube plant at Youngstown.

* * *

THE HOLYOKE CO. INC., Holyoke, Mass., manufacturer of covered wire and wire specialties, has bought the Century Machinery Co. plant at Holyoke and will start at once moving machinery and equipment into the new quarters. The change is being made to obtain larger space and present capacity will be doubled in the new plant.

* * *

DELUXE METAL FURNITURE CO. has been organized at Warren, Pa., to take over the former plant of the Gisholt Machine Co. and establish the manufacture of metal shelving and inside furnishings and office furniture. H. P. Stone is president and H. J. Onions is in charge of the production department. The organization was sponsored and carried through by the Warren chamber of commerce.

* * *

LOCKE & CO., Detroit, builder of automobile bodies, has bought the Symington gun plant, Leighton avenue and Greenleaf street, Rochester, N. Y., and will remodel it for body production, removing its Detroit plant there. The company was organized in Detroit in 1912 and makes this move because of inability to expand further in its present plant. Charles M. Fleishman, New York, is president. Newton H. Manning, formerly with Rolls-Royce, is vice president and will be in charge of the plant.

* * *

MOTOR AND ACCESSORY MANUFACTURERS ASSOCIATION has elected as president H. L. Horning, president of the Waukesha Motor Co., Waukesha, Wis. Other officers include: First vice president C. H. L. Flintermann, Michigan Steel Castings Co., Detroit; second vice president, E. B. Clark, Clark Equipment Co., Buchanan, Mich.; third vice president, M. A. Moynihan, Gemmer Mfg. Co.; treasurer, L. M. Wainwright, Diamond Chain & Mfg. Co.; secretary and assistant treasurer, J. M. McComb, Crucible Steel Co. of America, Pittsburgh.

Industrial Men in the Day's News

Edwin Corning, Elected Democratic Chairman in New York State

HIS genius for organizational work has won him rapid success in politics the same as in the alloy steel industry.

LOVE of animals is a tradition of the Corning family. Although his ancestors favored horses, his interest is chiefly in Irish wolf hounds.

HOTEL Ten Eyck, Albany, scene of his recent election, is on the site of the old Corning mansion, where he was born 43 years ago.

EDWIN CORNING, elected chairman of the Democratic state committee in New York Jan. 15, preserves the traditions of an old family whose members worked hard but never forgot how to play. In past days his ancestors played largely with horses. Hanging in Mr. Corning's residence, for instance, is an oil painting of his grandfather, Erastus Corning, first president of the New York Central railroad, and a member of congress during the Civil war. The painting shows the Corning of three generations ago in the act of driving a horse named "General Jackson." The Cornings of those days also were ardent Democrats and their party loyalty, among other things, took the form of naming their trotting horses after Democratic politicians and statesmen. "Henry Clay," a horse famous in American turf history, was bred in the Corning stables.

Edwin's father, also named Erastus Corning, was a well-known Democrat and active in the councils of his party. Edwin, it turns out, was elected head of the party in his state on the very spot where he was born 43 years ago, for the Democratic meeting was held in the Hotel Ten Eyck which now occupies the site of the old Corning mansion in Albany.

Mr. Corning's connection with politics began only five years ago. At that time he succeeded Patrick E. McCabe as county leader at Albany. William Barnes was then the Republican leader and Albany was a rock-ribbed Republican stronghold. Such is the genius of Mr. Corning in organization work that in a short time after succeeding McCabe, his party began winning elections by bigger majorities than the Republicans had ever piled up. As a result of the work done by him and his associates, Albany county now is one of the strongest Democratic counties in New York state.

The tactics pursued by Mr. Corning in winning political success are the same as those employed by him as president of the Ludlum Steel Co. When he took over the reins in this company, the plant at Watervliet, N. Y., had only two 30-pot crucible furnaces. Since then it has developed into one of the largest plants in this country devoted exclusively to the production of alloy and tool steels. Mr. Corning early became interested in electric furnaces and under his encouragement the Ludlum type electric furnace was developed. The company was one of the first to produce alloy and tool steel in the electric furnace in place of crucible pots. The plant for many years has been completely equipped with electric furnaces.

A striking picture of the manner in which Mr. Corning handles his steel company is drawn as follows by one who knows him well:

"Mr. Corning has always taken a greater personal interest in the steel plant than in any of his industrial enterprises. He takes great pride in keeping personally informed on every detail of the business, and in knowing personally and being able to call by his first name, every employe in the plant. He literally works in his shirtsleeves. Always calm and self-contained, his disposition is such as to keep an organization functioning with great efficiency. He has the knack of selecting capable subordinates and of getting them to co-operate

smoothly. Too, he will back up his men to the limit. While it is easy to get along with him, he keeps his eyes on everything and hence knows just what is going on."

Closely associated with Edwin Corning is his brother, Parker Corning, member of congress from New York, and vice president and treasurer of the Ludlum Steel Co. In turn Edwin Corning is treasurer of the Albany Felt Co., of which Parker Corning is president. The brothers are interested together in several other industrial enterprises in or near Albany.

Edwin Corning graduated from Yale in 1906 and his connection with the Ludlum company dates back practically to his graduation. He is the owner of a large farm on the outskirts of Albany and there he makes his home. A few years ago he gave up horses but has kept up his interest in dogs, especially Irish wolf hounds. Some of the finest dogs of this strain in the country are in his kennels. He also takes an active interest in the management of his farm and in the summer gets exercise by helping with the farm work. Mr. Corning is an active member of the Masonic order.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

JOHN O. TUCKER has been appointed manager of sales with Wheeling Steel Corp., Wheeling, W. Va., succeeding Walter B Higgins, who was elected to the board of directors and vice president in charge of sales as announced in IRON TRADE REVIEW, Jan. 14. Mr. Tucker started in the steel industry in 1906 with Joseph T. Ryerson & Son, Inc., Chicago, at Kansas City and St. Louis, until becoming district sales manager for the LaBelle Iron Works at Detroit in 1919. When this company combined with the Wheeling Steel & Iron Co. and Whitaker-Glesner Co. to form the present Wheeling Steel Corp., he continued to represent the consolidation at Detroit until the present appointment.

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Frank W. T. Amis of E. Arthur Tutein, Inc., New York, will sail for Europe, Jan. 30.

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Harry Loeb, for more than 20 years in the Philadelphia sales office of Lukens Steel Co., Coatesville, Pa., has been transferred to the New York office.

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Dean Dexter S. Kimball of Cornell university, Ithaca, N. Y., has been elected president of the American Engineering council, to succeed former Governor James Hartness, of Vermont. Dean Kimball was president of the American Society of Mechanical Engineers in 1922.

* * *

George M. Muntz, president of the Tropenas Co., New York, engineers, will sail for Brazil Jan. 30, where he will visit the Rio de Janeiro office and the company's new works there and in Sao Paulo.

* * *

Joseph B. Graham, head of the Graham truck division of Dodge Bros., Inc., Detroit, was elected vice president of Dodge Bros. Co. in charge of manufacturing, succeeding A. E. Mitchell, who has been made vice president in charge of purchases.

JOHN O. TUCKER

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Charles W. Hunt, assistant secretary of F. R. Phillips & Sons Co., Philadelphia and New York, iron and steel distributor, is taking an extended trip through the South and Cuba in company interests.

* * *

Sir Robert Hadfield, noted English metallurgist, has been made an officer in the French Legion of Honor, which decoration was given in recognition of his metallurgical investigations. Articles by Sir Robert have been published in IRON TRADE REVIEW recently in the Nov. 26, Dec. 3 and Dec. 24 issues.

* * *

Henry P. Blumenauer, president of Arcade Malleable Iron Co., Worcester, Mass., since 1920, has been elected president of the New England Foundrymen's association. Born at Naugatuck, Conn., 1887, Mr. Blumenauer graduated from Cornell university in 1911 and traveled in the Far East for five years with the Standard Oil Co. On his return in 1915, he joined the Eastern Malleable Iron Co., Naugatuck, Conn. In 1920 he left the sales department to purchase controlling interest in the Arcade company.

* * *

A. F. Case has been appointed manager of the coal and ore division of Wellman-Seaver-Morgan Co., Cleveland, builder of car dumpers, ore bridges and heavy equipment.

P. H. Douglas has been made manager of the general equipment division.

J. F. Rogers has become manager of the gas producer division.

J. B. Shaub has been promoted to manager of engineering production, in charge of the drafting room and order department.

J. H. Stratton and Miss J. L. Krotz have been made assistant purchasing agents.

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Thorne L. Wheeler has left Wheeler & Woodruff, New York, chemical engineers, to join Arthur D. Little, Inc., Cambridge, Mass., chemists, engineers and managers.

* * *

H. S. Durant, for 17 years with the American Steel & Wire Co., Cleveland, and recently in charge of its Detroit office, has been made head of the cold-rolled strip and spring sales department of the company at Chicago. He succeeds Lewis Johnson, who died Nov. 29. Mr. Durant, who is 46, was

graduated from the University of Michigan, Ann Arbor, Mich., in 1902. In 1909 he became a salesman at Chicago for the American company, five years later becoming assistant manager of the electrical department. From 1917 to 1921 he was in charge of the St. Paul office. In 1921 he was given charge of the Detroit office, a post he has held since, barring an interruption on account of ill health.

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J. W. Watts recently was elected vice president of Peden Iron & Steel Co., Houston, Tex., succeeding the late Charles D. Golding.

Edwin D. Peden was named secretary. E. A. Peden was re-elected president.

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H. W. Fly, president of Davis Hardware Co., Monette, Mo., was elected president of the Western Retail Implement and Hardware association at the thirty-seventh annual convention at Kansas City.

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Samuel H. Whitaker has left the Walter-Wallingford Co., Cincinnati, pig iron and coke dealer, after 12 years service. Mr. Whitaker was formerly assistant to the managing director of Dayton Coal & Iron Co., Dayton, Tenn.

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George Bartol, recently treasurer of Otis Steel Co., Cleveland and prior to that time president, was elected vice president on Jan. 22.

Ludwig Kemper, vice president of Midland Steel Products Co., Cleveland, succeeds Mr. Bartol as treasurer.

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A. H. Tischer has joined the engineering staff of Foote Bros. Gear & Machine Co., Chicago, as designing engineer. After the war Mr. Tischer became connected with P. T. Wheel Co., Dayton, O., as designing engineer, and later with Steinmetz Electric Motor Car Corp. in the tractor division.

* * *

Hubert D. Bennett has been elected president of Toledo Scale Co., Toledo, O., succeeding the late Henry Theobald. Mr. Bennett is a son of the late George W. Bennett, formerly vice president of Willys-Overland Co., Toledo, and was associated with the same company until 1919, when he went to Boston for the Studebaker Corp. Later he was transferred to South Bend, Ind., as assistant advertising manager and vice president in charge of sales, and in 1924 to the New York branch as assistant retail sales manager. Since May, 1925, he was with W. L. Brann, Inc., New York, advertising agency.

O. C. Reeves, formerly general superintendent, has become first vice president to succeed the late R. R. Theobald.

W. C. Cookin, former general sales manager, has been named second vice president.

Large Uses of Steel

(*Concluded from Page* 274)

hardware and similar uses some manufacturers begin with cold rolled strip, asking an extra for this grade. Ordinarily washers are not heat-treated, but some special lines of lock washers are hardened by an automatic process in which the washers are fed into one end of a furnace and are discharged 15 to 20 minutes later at the other. The great bulk of lock washer production is a sheet article, although for some of the smaller types wire is used. Most lock washers have a special shape for which their makers claim special advantages.

The smallest washer in general use fits a 3/16-inch bolt, has an outside diameter of 9/16-inch and is made of No. 18 gage material. The other end of the range into which most washer production falls is the one fitting a 1-inch bolt, with an outside diameter of 2½ inches and of No. 8 gage material. In the smaller sizes, including the washer fitting of 1-inch bolt, the hole of the washer is 1/16-inch larger than the bolt, while above this the clearance is ⅛-inch.

Even with the most skilled of operators and the most economy of raw material the waste is 50 per cent. This is sold as No. 1 busheling or shoveling steel scrap. The largest manufacturer uses about 20 tons of material a day. Washers are universally shipped in 200-pound kegs and priced at a discount off a standard list. For packing in small packages an extra is charged, amounting to about 25 cents for 100-pound kegs and $2 for 1-pound packages. Prices usually are f.o.b. mill, but frequently an allowanace is made for freight.

Railroads and automotive and construction industries would probably rank as the three largest users. The spread of radio has greatly increased demand. The washer industry, like many others, started in New England but has moved westward with the growth of industry.

Obituaries

WILLIAM P. CHAMPNEY, president of Eberhard Mfg. Co., Cleveland, malleable castings, until his retirement last September, died Jan. 24 in Sea Breeze, Fla., at the age of 74. Mr. Champney has been with the Eberhard company since its incorporation in 1881, serving first as secretary and treasurer. Prior to that time he was with the National Malleable Iron Co. On the death of the first president of the Eberhard company, A. A. Pope, in 1913, Mr. Champney became president. He was also a director of the National City bank, Cleveland.

* * *

Luther Hess, owner of the Hulley Machine Foundry, Marion, Ind., died recently at the age of 61.

* * *

John G. Greey, a partner of William & J. G. Greey, Toronto, Ont., machinery manufacturers, died Jan. 17 at the age of 76.

* * *

Edward C. Fletcher, one of the organizers of Diamond Chain Co., Indianapolis, died recently at age 56. Mr. Fletcher had retired several years ago.

* * *

Albion Paul Aiken, retired department superintendent of Carnegie Steel Co., Pittsburgh, died yesterday at his home in Braddock, Pa. Born in Port Perry, Jan. 4, 1855, Mr. Aiken had been with the Carnegie company for 40 years, and prior to retiring in 1914 had been at the Edgar Thomson steelworks.

* * *

John C. Greenway, general manager of Calumet & Arizona Mining Co., died in New York Jan. 19. Mr. Greenway was well known in mining and engineering circles, and was connected first with Carnegie Steel Co. As superintendent of Oliver Iron Mining Co., he invented an ore washing process. He was with the Calumet & Arizona company since 1910 and developed a new leaching process. Mr. Greenway was once a member of the "Rough Riders" and served as colonel in the World war.

Industrial Business Changes

ERIE FOUNDRY CO., Erie, Pa., manufacturer of steam, air and board drop hammers, trimming presses and other forge shop equipment, has established several sales offices. Howard Terhune has been placed in charge of a new office at 1120 Myrtle avenue, Plainville, N. J., L. F. Carlton at 549 Washington boulevard, Chicago, and R. B. McDonald at 409 Donovan building, Woodward avenue and Duffield street, Detroit.

* * *

U. S. Hoffman Machinery Corp. has established headquarters at 3822 East Washington street, Indianapolis, Ind.

* * *

M. O. Cedergren Sheet Metal Works, Los Angeles, has removed to its new plant at 2331 Enterprise street.

* * *

Lehigh Structural Steel Co. has removed its Washington office to 2525 Pennsylvania avenue. Henry B. Myers is district manager.

* * *

Hannum Mfg. Co., Milwaukee, manufacturer of steering gears, has opened a sales office in the General Motors building, Detroit.

* * *

Charles T. Jones Co., 981 North Front street, Philadelphia, has been organized to take over Jones & Willson, manufacturers of steel and iron forgings.

* * *

Colby & Christie, bridge inspection service, Witherspoon building, Philadelphia, have moved their offices to the Perry building, Sixteenth and Chestnut streets.

* * *

The Carroll-McCreary Co. Inc., Long Island Ctiy, N. Y., iron and steel has moved to its newly erected warehouse at 21-51 Borden avenue, that city.

* * *

Simplex Wire & Cable Co., Boston, has opened a branch office at Cleveland, in the Union Trust building, in charge of William H. LaMond.

* * *

Geometric Tool Co., New Haven, Conn., has appointed the F. F. Barber Machinery Co. Ltd., 32 Front street West, Toronto, Ont., its exclusive representative in Ontario.

* * *

Monarch Tractor, Watertown, Wis., has been reorganized and its plant will be removed to Springfield. Ill. Robert P. Gotschall is president and H. B. Baker vice president.

* * *

Griscom-Russell Co., New York, manufacturer of heaters, coolers, evaporators, filters and other specialties, has removed its general offices from 90 West street to 285 Madison avenue, at Fortieth street.

* *

General Phonograph Mfg. Co., Elyria, O., has changed its name to the General Industries Co., to represent better the broader lines of its activities. No other change has been made in business, plant or personnel.

* * *

The Bates Expanded Steel Truss Co. has moved its general offices from 232 South Clark street, Chicago, to a new building at 152nd street and Forsyth avenue, East Chicago, Ind., adjacent to its East Chicago plant.

* * *

Alpha Lighting Supply Co., Los Angeles, manufacturer of wrought iron lighting fixtures, is moving its plant and machinery to Inglewood, Calif. A. Lipton is president and H. Hoffman is general manager.

* * *

The Apex Smelting Co., Chicago, has established a new service department for rendering consulting and advisory service in aluminum metallurgy. Dr. Robert J. Anderson, Cleveland, has been placed in charge.

* * *

Harnischfeger Sales Corp., Milwaukee, distributor for the Harnischfeger Corp., has opened a branch office at 808 Guaranty building, Indianapolis, Ind., in charge of J. H. Enochs as district manager.

* * *

American Electric Corp. has been chartered in Delaware to take over the business and assets of the Belding Hall Co. of Miigan, manufacturer of electrically operated refrigeration machinery.

* * *

Cullern-Atkinson Co. Inc., 121 Park avenue, East Hartford, Conn., manufacturers of general sheet metal work, ventilating and blowpipe work, enameling and drying ovens, has removed into its own building, affording larger space.

* * *

The Cleveland district office of the Newton Steel Co., now located at 1072 Hanna Bldg. will be moved Feb. 1 to 1913 Union Trust building. The Cleveland office in charge of Donald McVey will handle sales in the Cleveland and Buffalo districts.

* * *

Bruce Products Corp., 173 East Woodbridge street, Detroit, has bought a plant at Howell, Mich., where it will manufacture a line of metal finishing materials. Cleveland and Chicago branch offices will be supplied direct from the new plant.

* * *

B. Nicoll & Co., 294 Madison avenue, New York City, representatives of French cast pipe makers in this country, have been appointed United States sales agent for Poliet & Chrusson, French cement makers. The French company operates 26 mills.

* * *

Shere Metal Products Corp., 329 Fifth avenue, New York, manufacturer of pressure lubricating systems, has changed its name to the Adams Grease Gun Corp., with Daniel G. Adams president. Capital stock will be increased shortly to provide for expansion.

* * *

Machine Tool Sales Co., Commercial Trust building, Philadelphia, has bought the business of the Eastern Machinery & Equipment Co. and its machinery stock, the equipment of the Rex Engineering Co. plant at Dunkirk, N. Y., the Bethlehem Motors Corp., the Graham Roller Bearing Co., Coudersport, Pa. and the Lakeside Forge Co., Erie, Pa. A warehouse has been established at Poplar and Front streets.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

Where additional information is presented, reference is made to date of issue in which previous item appeared.

BIRMINGHAM, ALA.—Birmingham Fabricating Co. Inc. has been incorporated with $10,000 capital by J. M. Plant, 2908 Thirteenth avenue North.

WOODWARD, ALA.—Woodward Iron Co., Frank H. Crockard president, will install electrically operated mine hoist at No. 2 mine. Equipment furnished by Hardie-Tynes Mfg. Co., Birmingham.

MIAMI, ARIZ.—Consolidated Copper Co. has awarded steel to the Union Iron Works, Los Angeles, for loading and excavation bridges to increase copper production.

LOMPOC, CALIF.—Celite Co. is building a garage, service shop and warehouse, requiring 150 tons of steel, to be fabricated by McClintic-Marshall Co.

LOS ANGELES—Electrical Products Corp. is building a 1-story plant at 1136 West Sixteenth street, general contract to Charles Bushlen. Plans by Frank L. Stiff.

LOS ANGELES—Advance Auto Body Works is having plans prepared by Henry E. Bean for a 2-story plant at Mission road and Macy street.

LOS ANGELES—Warren Electric Foundry Co., 3334 East Slauson avenue, has been formed to manufacture gray iron and steel castings.

LOS ANGELES—Smoot-Holman Co., Inglewood, has started operation of its gray iron foundry, Norman P. Earle superintendent. Casting plant covers 13,500 feet and addition will be built soon.

BRIDGEPORT, CONN.—Wright & Corson Mfg. Co., Charlotte street, manufacturer of rivets and machine screws, is building an addition 60x90 feet. General contract to George H. MacKenzie.

BRIDGEPORT, CONN.—The Lowe Machinery Co. has been incorporated with authorized capital of 500 shares of common stock without par value to manufacture machinery by Thomas L. Lowe, Edward K. Nicholson, and William J. Buckley, all of Bridgeport.

DERBY, CONN.—Derby Gas & Electric Co., 22 Elizabeth street, is building a 3-story shop 41x85 feet on Housatonic avenue. R. W. Foote, 185 Church street, New Haven, is architect.

MERIDEN, CONN.—Donle Electrical Products Corp. has been incorporated with $50,000 capital to manufacture electrical specialties by William H. Bristol, president, and others.

NEW HAVEN, CONN.—Voos Co., Porter street, manufacturer of shears and cutlery, will build a 2-story addition 35x44 feet.

WEST HAVEN, CONN.—Orange Welding Co. will rebuild and re-equip its plant, recently burned.

JACKSONVILLE, FLA.—Highway Iron Products Co., C. V. Joseph president, McDuff, avenue, is building a 1-story plant 114 x 250 feet, equipped with traveling cranes, power shears, heavy bending rolls and smaller tools. Ward B. Hill is construction engineer.

TAMPA, FLA.—Solar Water Heater Co. is building its first plant unit 100x100 feet, general contract to Logan Bros. Co., Citizens Bank building. H. C. Neilsberg, 407 Tampa street, is manager.

ALBANY, GA.—Central of Georgia Railway Co., C. K. Lawrence, chief engineer, Savannah, is taking bids for a 9-stall roundhouse, boiler plant and storehouse.

ALBANY, GA.—Central of Georgia Railroad Co., C. E. Weaver, Savannah, Ga., engineer of maintenance of way, will build a 1-story roundhouse and storehouse.

CHICAGO—Chicago Automatic Conveyor Co., A. L. Shaw president, has bought three acres at Oakley avenue and Seventy-Fourth street, on which a plant will be built.

CHICAGO—Multi Electrical Mfg. Co., C. T. McDonald president, 1848 West Fourteenth street, is having plans made for remodeling its plant.

CHICAGO—Chicago Job Colorpress Co., W. S. Tate president, 448 North Wells street, is having preliminary sketches made for a 3-story plant 40x60 feet.

CHICAGO—Western Name Plate Co., 4638 West Huron street, will build a 1-story plant and office building 120x120 feet at 4600 West Superior street.

CHICAGO—Johnson Shuttle Co., 215 West Superior street, manufacturer of sewing machine attachments, will build a 1-story addition 75x125 feet. Carl M. Almquist, 118 North LaSalle street, is architect.

CHICAGO—Chicago Rivet & Specialty Co., 4842 West Kinzie street, will build a 1-story plant 120x120 feet at Cicero, Ill., general contract being given to the Holton-Seeley Co., 140 South Dearborn street. John A. Morrisey is president.

CHICAGO—Lathrop-Paulson Co., manufacturer of milk can and bottle washing machinery, 2459 West Forty-eighth street, has had plans made by Frank W. Perkins, 6640 Yale avenue, for a 2-story factory building 36x120 feet.

CHICAGO—Johnson Shuttle Co., J. W. Johnson manager, 215 West Superior street, will build a 1-story plant 75x122 feet on Belmont avenue near Kimball avenue. Carl M. Almquist, 118 North La Salle street, is architect.

CHICAGO—Patterson Specialties Inc., 3905 North Western avenue, has been incorporated with $1000 capital to manufacture automobile and metal specialties by Carroll J. Lord, Russell F. Locke and Norma L. Olson. Ashcraft & Ashcraft, 134 South LaSalle street, are correspondents.

CHICAGO—R-N-B Mfg. Co., 625 West Jackson boulevard, has been incorporated with $10,000 capital to operate a general machine shop by Thomas H. Roberts, Bernard Bensen, and Frederick A. Moreland. Townley, Wild, Campbell & Clark, 105 South LaSalle street, are correspondents.

DECATUR, ILL.—Wabash railroad, J. E. Taussig president, Exchange building, St. Louis, is planning an addition to its locomotive shop here.

WABASH, IND.—Frank Diehl Inc. has been incorporated to manufacture woodworking tools and machinery by Frank Diehl, Jessie E. Diehl and George J. Favell.

NEWTON, IOWA.—Maytag Co. is building a 1-story gray iron foundry 190x280 feet.

OSKALOOSA, IOWA—Western Mfg. Co., manufacturer of air pumps, is planning a new plant to be erected this year. J. B. McMullen is general manager.

JOPLIN, MO.—Empire Electric Machinery Co. has been incorporated with $200,000 capital to manufacture washing machines by Carl R. Meyers, 812 Joplin National Bank building and others.

KANSAS CITY, MO.—National Alarm Co. of Missouri has been incorporated to manufacture alarm signal equipment by R. H. Miller, 3930 Forrest street.

WICHITA, KAN.—Wilson-Wetterhold Machinery Co., 214 South Wichita street, C. O. Newman, manager, will build a 1-story plant 150x150 feet.

HOPKINSVILLE, KY.—Forbes Mfg. Co. is having plans made for reconstruction of its wagon building plant, including a machine shop.

BALTIMORE, MD.—Kennedy Corp., Wells and Charles streets, will rebuild its foundry plant, recently burned.

BALTIMORE, MD.—Pronto Mfg. Co., 722 East Pratt street, has been incorporated with $50,000 capital to manufacture electrical specialties by William D. Schofield and others.

BALTIMORE, MD.—Edward Katzinger Co., 1959 North Cicero avenue, Chicago, will build a plant for the manufacture of bakery tinware at Fleet and Ninth streets.

BOSTON—General Alloys Co., 405 West First street, will build a 1-story foundry.

CHICOPEE FALLS, MASS.—J. Stevens Arms Co., a subsidiary of the Savage Arms Corp., Utica, New York, has bought the plant and goodwill of the Page Lewis Co., this city and will continue the manufacture of rifles.

FALL RIVER, MASS.—Fall River Electric Co., Roy F. Whitney treasurer, will build a 2-story service plant 50x135 feet. E. J. Marvell, 209 Bedford street, is engineer.

HOLYOKE, MASS.—Holyoke Co. Inc. will double capacity by moving to plant of Century Machinery Co., which it has bought. Additional equipment will be required for the manufacture of covered wire and wire specialties.

LAWRENCE, MASS.—Alco Mfg. Co. has been incorporated with $200,000 capital to manufacture window latches and builders hardware.

BENTON HARBOR, MICH.—Benton Harbor Malleable Foundry Co. will build a drop forge shop and additions to its core room.

DEARBORN, MICH.—Larger plant will be built at once to replace burned airplane experimental laboratory of Ford Motor Co. on Oakwood boulevard.

DETROIT—Eaton Spring Corp., Cleveland, has bought the plant and site of the American

(*Continued on Page 317*)

Warehouse Market Recovery Steady

Sheets Still Appear Weak Spot—Inventory Felt in East

DEMAND for iron and steel products from warehouses has shown steady increase since Jan. 1. Although inventory taking still is evidenced in New York other districts have hit an active stride again, January tonnage being above December. Prices continue firm and unchanged, except for a drop in sheets at New York, and a general revision at Philadelphia.

A number of warehouse price changes were put into effect at Philadelphia last week. Some prices are lower and some higher. Generally the present prices are more stable than those of recent weeks. Business is in good volume.

Jobbing demand in the New York metropolitan warehouse district has improved, but still is feeling the effects of inventory taking. Prices continue steady on most items. In galvanized and black sheets only does there appear to be any tendency to shade. At present galvanized sheets may be quoted at 5.35c to 5.50c and black sheets at 4.30c to 4.35c.

Warehouse jobbers at Cincinnati continue to book a satisfactory volume of business despite the fact individual orders involve small tonnages. Plates and deformed bars are in good demand. Structurals are dragging owing to the season of the year and adverse weather conditions. Prices are firm.

St. Louis warehousemen find demand general though the line has slowed down slightly during the past few days, due chiefly to unfavorable weather. Buying continues well above the usual seasonal levels. Orders for special jobs have added to the volume of tank and plate sales. Prices showed no change worthy of note.

Buying from Cleveland warehouses is increasing. One jobber shows a large gain over December, but demand generally is gaining slowly from the inventory lull. Prices are firm and cutting at a minimum. Tonnage per order is showing a gain in some instances and buying is widespread.

Movement of hoops and bands features good demand for iron and steel warehouse products at Detroit. Mills are from 40 to 60 days behind on deliveries for these products and many buyers here are filling their requirements out of local warehouses. Prices are unchanged and steady.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.05c
New York	3.24c
Philadelphia	2.85c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	2.85c to 3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c
Cincinnati	3.30c
Cleveland	2.40c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.00c to 3.25c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.05c
New York	3.34c
Philadelphia	2.70c to 3.10c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.75c to 3.05c
Philadelphia, 3/16-inch	2.90c to 3.20c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.65c
Los Angeles	3.70c
New York	3.89c
Portland	4.25c
Philadelphia	3.50c
San Francisco	3.75c
Seattle	4.50c
St. Louis	3.65c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.60c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	4.10c
Detroit	4.25c
Los Angeles	4.75c
New York	4.30c to 4.35c
Philadelphia	4.60c to 4.65c
Portland	5.50c
San Francisco	4.75c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.35c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.90c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.25c
Detroit	5.50c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.35c to 5.50c
Philadelphia	5.85c
Portland	6.25c
San Francisco	6.00c
Seattle	6.50c
St. Louis	5.40c
St. Paul	5.50c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	3.90c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse, New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
¼ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.75 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.50
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent	nominal
Indian minimum 47 per cent	nominal
Caucasian, 53 to 55 per cent	
....Washed, 41 to 43 cents c.i.f. tidewater	

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$17.50
Washed gravel, imported duty paid eastern tidewater, per net ton	17.50 to 18.00

Construction and Enterprise

(*Continued from Page* 315)

Blower Co. and will convert it to manufacture of automobile springs.

DETROIT—C. G. Spring & Bumper Co., Christian Girl president, 2642 East Grand boulevard, has let a contract to the Cooper Widenmann Construction Co., 4612 Woodward avenue for alterations and additions to plant.

DETROIT—Liberty Welding & Mfg. Co., J. K. Smith president, 4200 Grand River avenue, will build a 1-story plant 30x115 feet at Twelfth and Calumet streets. General contract to M. M. Lerner Construction Co., 1442 Griswold street.

DETROIT—Detroit Metal Specialty Corp., 1651 Beard avenue, has been incorporated to manufacture steel automobile trucks formerly the product of the Ireland & Matthews Mfg. Co., and has leased the plant of the latter company. D. M. Ireland is president and Neil McMillan is secretary.

ROCHESTER, MICH.—Oakland Stamping Machine Co., E. S. Stryker president, will build a plant addition to increase capacity.

COLUMBUS, MISS.—F. M. Jacobs, Sixth and College streets, will rebuild his burned machine shop.

JACKSON, MISS.—American Gear & Mfg. Co. is having plans made for a 1-story machine shop 175x250 feet.

ST. LOUIS—Perfection Equipment Co. Inc. has been incorporated with $25,000 capital to manufacture metal products by Edward F. Rorke, Nellie L. Rorke and Estella C. Neuhaus. W. I. Dempsey, 406 Market street, is attorney.

BAYONNE, N. J.—City commission, city hall, will build a 1-story automobile service, repair and garage building 175x200 feet. Louis Quien Jr., 229 Broad street, Elizabeth, N. J., is architect.

ELIZABETH, N. J.—Simmons Co., manufacturer of metal beds, 110 East Forty-Second street, New York, is making additions and alterations at its plant here. H. K. Ferguson Co., Cleveland, has the contract.

JERSEY CITY, N. J.—L. Koven & Brother, 154 Ogden avenue, tank and boiler manufacturers, will rebuild their burned boiler house.

JERSEY CITY, N. J.—White Foundry Co. has been incorporated with 500 shares no par value by Frances Coyner, Arthur A. White and Arthur G. White. Gross & Gross, Jersey City, are attorneys.

JERSEY CITY, N. J.—Machinery Sales Co. has been incorporated with $125,000 capital by James McIlvrid, Daniel A. Bertolette and Edwain V. Cotter. James E. Pyle, Jersey City, is attorney.

NEWARK, N. J.—Atlas Fence Co., 1 Clinton street, manufacturer of wire and iron fence, will build a 1-story addition. Plans by Fred A. Phelps, architect, 21 Fulton street.

NEWARK, N .J.—Weber & Cheer Mfg. Co. Inc., 263 Sussel avenue, has been incorporated with $500,000 capital to operate a machinery sales business.

WEST NEW YORK, N. J.—Studerus Oil Heating Corp. has been incorporated with $50,000 capital to manufacture oil burning devices by Ernest Studerus, Teaneck, N. J.; Fred Goldstein, Hoboken, N. J. and Max Levitin, Weehawken, N. J. Hollander & Leighter, Union City, N. J., are attorneys.

BROOKLYN, N. Y.—Caise Electrical Hot-Water Heater Co. has been incorporated in Delaware with $100,000 capital by Charles Caise, 130 Flatbush avenue, Brooklyn, to manufacture an electric and water heating device for domestic use.

BUFFALO, N. Y.—Worthington Pump & Machinery Corp., Roberts avenue, will build a 1-story addition to its foundry.

LOCKPORT, N. Y.—Tuscarora Hydraulic Co. has been incorporated with 200 shares common stock no par value to manufacture machinery by F. W. Ashford, L. S. Tucker and G. F. Russell. W. Tubbs, Buffalo, is attorney.

NEW YORK—Parr Metal Products Corp. has been incorporated with $50,000 capital by S. Wertenhell, A. A. Parket and M. Parmet. H. London, 302 Broadway, is attorney.

NEW YORK—Stewart Warner Speedometer Co. has let general contract to Smith & Leo 103 Park avenue for 4-story addition 90x100 feet, at 37 West Sixty-fifth street.

NEW YORK—Interstate Metal Co. has been incorporated with 200 shares common stock no par value by D. Pode and R. Geller. R. Geller, 231 Sutter avenue, is attorney.

NEW YORK—Ross & O'Brien have been incorporated with $10,000 capital to operate an iron works by A. Denner, F. Persh and V. Stern. Prince & Loeb, 19 Cedar street, are attorneys.

NEW YORK—Edwards Electric Signalling Device Corp., Exterior street, near 140th street, is building a 2-story addition 50x100 feet. General contract to Barney Ahlers Construction Corp., 110 West Fortieth street.

NEW YORK—Coronian Wire Works has been incorporated with $15,000 capital to manufacture wire and its products by S. Vavrica, M. Banlsik and F. Sedugila. J. N. Robins, 25 West Forty-third street, is attorney.

NEW YORK—Wheeler Oil Gas Producer has been incorporated with $500,000 capital to manufacture engines, by F. W. Barker, and E. H. Oseland. F. L. Fletcher, 2 Rector street, is attorney.

NEW YORK—Littell & Kobliha have incorporated with $10,000 capital to operate an iron and steel business by A. Chaice and E. Swaybell. S. S. Jaffe, 15 Park Row, is attorney.

NEW YORK—Taylor Traffic Engineering Corp. has been incorporated with 2500 shares at $100 each and 2500 common no par value by H. Wolfe, E. J. Fixman and S. G. Johnson. Foxman & Fixman, 14 East Fortieth street, are attorneys.

NEW YORK—Belding-Franklin Vegetable & Citrus Fruit Peelers, has been incorporated with 100 shares common stock no par value to manufacture machinery by E. W. Champion, E. F. Unger and A. Rosen. Otterbourg, Steindler & Houston, 200 Fifth avenue, are attorneys.

PEEKSKILL, N. Y.—Cole Mechanical Device Co. has been incorporated with $125,000 capital to manufacture iron and steel devices by E. J. Cole, E. E. Cole and G. D. Evans. J. H. Baxter, Peeksakill, is attorney.

ROCHESTER, N. Y.—Co-Operative Foundry Co. will double capacity of its enameling department. Equipment has been purchased from the Porcelain Enamel & Mfg. Co., Baltimore, Md.

SYRACUSE, N. Y.—Lamson Co., manufacturer of conveying machinery and devices, is building a 1-story addition 63x200 feet. H. K. Ferguson Co., Cleveland, has the general contract.

TROY, N. Y.—Sweet & Doyle Foundry & Machine Co., Green Island, will build a machine shop 90x260 feet.

ASHEVILLE, N. C.—Ideal Machinery Co. has been incorporated with $100,000 by B. F. Smith and H. M. Whitfield.

CINCINNATI, O.—Knowles Slicer Co. has been incorporated with $500 capital to manufacture metal novelties by F. A. Knowles, A. A. Knowles, Edward G. Schultz, William O. Strauss and Richard E. Leblond.

CLEVELAND—American Steel & Wire Co. will build a boiler plant at 2700 Broadway with 6570 horsepower, using blast furnace gas for fuel.

CLYDE, O.—Vitrified Iron Products Co., Harry Warman president, is enlarging its enamel shop and installing an enameling furnace built by the Ferro Enamel Supply Co., Cleveland.

NEWARK, O.—Simpson Foundry & Engineering Co. is having plans made for a 1-story foundry 120x200 feet.

NEWCOMERSTOWN, O.—Vixen Tool Co. has been incorporated with $500 capital by Paul E. Heller and associates.

TOLEDO, O.—Willys Overland Co., J. M. Willys president, Central avenue, has let general contract to H. J. Spelker & Co., Nasby building, for a forge shop 80x700 feet and wings 80x540 feet and 80x700 feet.

TULSA, OKLA.—Economy Pump Co. has been incorporated with $10,000 capital by George A. Gage, 109 South Wheeling street.

BANGOR, PA.—Flory & Deshler Mfg. Co. has been incorporated with $10,000 capital to take over the business of the Never-Break Products Co., manufacturer of automobile brake shoes and other specialties.

FLEETWOOD, PA.—Fisher Body Co. has awarded a contract to the Austin Co., Cleveland, for an extension of its plant here, consisting of three units, to increase production from three to ten bodies per day.

LANCASTER, PA.—National Piston Corp. is having plans made for a plant to be built this spring for the manufacture of a new type of piston. A. W. Brockmeyer, Brookline, Pa., is president; John F. Brubaker, Lancaster, vice president and Noah F. Herr, secretary and treasurer.

NORTH PHILADELPHIA, PA.—Park Device Mfg. Co. Inc. has been incorporated with $50,000 capital to manufacture amusement devices by Robert Lusse, 2809 Fairhill street, North Philadelphia, Joseph Lusse, Richard F. Lusse and Raymond Lusse.

PHILADELPHIA—Haines, Jones & Cadbury Co., 1136 Ridge avenue, manufacturer of plumbing equipment, has bought the former plant of the Ace Motorcycle Works, 7 acres, and will establish its plant there.

PHILADELPHIA—John W. Watson Co., Locust and Twenty-fourth streets, manufacturer of automobile accessories, will build a 1-story plant 125x780 feet. Ballinger Co., Twelfth and Chestnut streets, is engineer.

PHILADELPHIA—A $264,000 contract has been awarded by the Franklin Sugar Refining Co. for a boiler house on Meadow avenue, south of Reed street, to Stone & Webster, Inc., Boston.

PHILADELPHIA—A $6300 plant alteration will be made by J. Reinhart, 1627-29 East Passhiunk, the general contract going to Wm. G. Uhler's Sons, Twenty-fifth and Snyder streets.

PHILADELPHIA—Bids will be closed Jan. 19 by the John Warren Watson Co. on a manufacturing building at Aramingo, Tulip and the Pennsylvania railroad. The Ballinger Co. is architect.

PHILADELPHIA—Phil-Murray Co. Inc. has been incorporated with $25,000 capital to manufacture radio and other electrical apparatus by Martin Wundohl, 1617 West Ontario street, Jacob Goldberg and A. G. Bauer.

PHILADELPHIA—Twentieth Century Sales Co. has been incorporated with $50,000 capital to manufacture automobiles, trucks and parts by A. V. Ayres, 5632 North Seventh street, Stanley Sokolove and Hadob Standkiewicz.

PHILADELPHIA—Janney Cylinder Co. has been incorporated with $5000 capital to manufacture castings, forgings and fittings by Walter T. Janney, 3109 Decatue street, Pauling Janney Cooper and Samson McDowell.

PHILADELPHIA—Clover Garage has been incorporated with $5000 capital to build and operate a service repair station and manufacture automotive repair parts by Louis A. Scullin, 28 South Fifty-first street and associates.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 45.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	43.00 to 46.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00 to 48.00

PHILADELPHIA—Frederick Grundy Iron Works Inc. has been incorporated with $20,000 capital to manufacture forgings and ornamental iron work by Charles W. Kaeser, 2210 North Seventh street, Frederick Grundy and Edwain Bowden.

PITTSBURGH—Commercial Brass Foundry Co. has been incorporated with $5000 capital by F. C. Arensberg and associates.

PITTSBURGH—Lustro-Coated Sheet Co., 1312 Sheffield street, will build a 1-story plant 100x200 feet for manufacture of copper and nickle plated steel.

PITTSBURGH—McGinnes Engineering & Supply Co. has been incorporated with $100,000 capital to manufacture heating and ventilating systems and appliances by J. E. McGinness, A. F. Ness and C. F. Brednich.

PITTSBURGH—Enterprise Bronze Foundry Co. has been incorporated with $10,000 capital to operate a nonferrous foundry by David S. Keilly, 2715 Murray avenue, Robert Keilly and Daniel M. Daily.

PITTSBURGH—Pittsburgh Hanger Co. has been incorporated with $30,000 capital to manufacture wire garment hangers and other novelties by Charles F. C. Arensberg, 1712 Oliver building, John Heron and James M. Graham.

POTTSTOWN, PA.—Bids were closed Dec. 31 on boiler house for Jacob Ulmer Packing Co.

READING, PA.—Carpenter Steel Co. is having plans made for rebuilding its burned nail mill at North Reading. E. J. Poole is general manager.

WILLIAMSPORT, PA.—Keystone Iron & Metal Co. has been incorporated with $100,000 capital to manufacture iron and metal products and conduct a foundry by Abraham Fischer, Mary N. Connor and Irma K. Fischer.

ANDERSON, S. C.—Osteen Mfg. Co. has been incorporated to manufacture grates and other products by P. C. Osteen and R. L. Ballantine.

CHATTANOOGA, TENN.—Chattanooga Implement & Mfg. Co., E. H. Sholar president, is having plans made for an additional plant unit.

CHATTANOOGA, TENN.—Simplicity System Co. is being formed by L. B. West, Volunteer Life building, to establish a plant for manufacture of asphalt mixing machinery.

KNOXVILLE, TENN.—Fulton Co., manufacturer of heat regulators, is building a 1-story addition 50x130 feet for a corrugating department. General contract to J. M. Dunne & Sons, Knoxville.

MARYVILLE, TENN.—Schriver Iron Works has been incorporated with $25,000 capital by O. H. Schriver, Ben H. Testerman, T. C. Schriver and H. S. Burnett.

MARYVILLE, TENN.—McNaughton Mfg. Co., manufacturer of iron grate bars and other castings, has been taken over by interests headed by O. H. Shriver of Knoxville, who will make considerable extensions to the plant.

EL CAMPO, TEX.—Evans-Paul Hardware Co., capital $25,000, has been incorporated by J. E. Evans, F. W. Paul and J. S. Morris to deal in automotive equipment and farm machinery.

FORT WORTH, TEX.—Texas Pacific Coal & Oil Co. plans for construction of 4 and 6-inch oil pipeline, requiring about 100 miles of pipe, between Stephens and Eastland county fields and Fort Worth refinery. About half the pipe required has been contracted for. Pump station equipment will be needed. E. R. Lederer, Dan Waggoner building, is vice-president and general manager.

HOUSTON, TEX.—Houston Spring Bed & Power Co. plans to double the capacity of its power plant, including installation of a 30,000-kilowatt turbo-generator and minor equipment.

HOUSTON, TEX.—T. T. Word Supply Co., dealers in oil well machinery, has been incorporated with $10,000 capital by T. T. Word, Charles Markle and M. L. Middleton.

HOUSTON, TEX.—Dixie Heating & Ventilating Co., capital $50,000 has been incorporated by A. R. Holliday, F. J. Walter and R. W. Franklin to manufacture and deal in sheet metal heating and ventilating systems.

HOUSTON, TEX.—Emsco Derrick Equipment Co. is building its plant, the first unit to be 80x200 feet, with a 50-foot crane runway and a galvanizing plant. Houston Structural Steel Co. has the general contract.

ORANGE, TEX.—Orange Car & Wheel Co., J. I. Byrne manager, will install equipment to increase capacity to 1000 tons fabricated steel per day.

EVERETT, WASH.—Pacific Corundum Wheel Works has been incorporated with $99,000 capital by G. H. Kravik and A. C. Bosshard.

SEATTLE—Hansen Precision Machinery Co. has been incorporated with $30,000 capital by M. H. Hansen and E. Linenschmidt.

SEATTLE—Pacific Coast Forge Co., 3800 Iowa street, spikes and bolts, will build a 1-story addition to its plant.

SEATTLE—Scotland Furnace Co. has been incorporated with $10,000 capital by Theodore P. Scotland and Clara M. Scotland.

SEATTLE—Harbor Island Brass Foundry, 3444 Thirteenth avenue S. W., is having plans made for a foundry addition 40x129 feet, at 2934 Thirteenth avenue.

SPOKANE, WASH. — Washington Water Power Co. has started construction of a power line through the Couer d'Alenes about 67 miles long.

HUNTINGTON, W. VA.—Armstrong Mfg.

Co., First street and Seventh avenue, will add to its plant and equipment, capital being increased from $500,000 to $1,000,000 to provide funds.

WHEELING, W. VA.—Wheeling Machine Products Co., 1920 Main street, manufacturer of pipe couplings, E. W. Krause general manager, will build a forge shop addition.

GREEN BAY, WIS.—The Northwest Engineering Works, Howard street, is making an addition to its plant and building a general paint shop.

MANITOWOC, WIS.—Aluminum Goods Mfg. Co., Fourteenth and Franklin streets, is building a 4-story plant 50 x 60 feet and 1-story 50 x 80 feet.

MARSHFIELD, WIS.—Felker Bros. Mfg. Co., A. G. Felker president, is building an addition to its plant for the manufacture of oil storage tanks. Capital recently has been increased from $125,000 to $150,000.

MARSHFIELD, WIS.—Architects Parkinson & Dockendorff, La Crosse, Wis., are completing plans for a $225,000 addition to the Purdy vocational and junior high school here. Marcus Hansen is secretary of the school board.

MILWAUKEE—Roto-Air Inc. has been incorporated with $100,000 capital in preferred and 3000 shares common no par value by G. W. E. Keuchle, William A. Harsh and C. F. Kurtze, to manufacture inventions of the latter.

MILWAUKEE—The Milwaukee Lead Works has been incorporated with 1000 shares of common stock of no par value to manufacture and deal in lead and lead products. The incorporators are A. H. Traudt, L. W. Schmidt and W. A. Millman, attorney.

MILWAUKEE—Valerius Refrigerating Corp. has been incorporated with $50,000 capital to manufacture mechanical refrigerating apparatus and automatic electrically operated domestic refrigerating machines by T. L. Valerius, Walter H. Benfelt and Peter J. Hayes, 425 East Water street.

MILWAUKEE—Contracts have been let by the Plastic Products Co., 123 Reservoir avenue, for a complete new plant on a new site on the Port Washington road near Lake boulevard. Architect A. L. Seidenschwartz, 290 Third street, is in charge. About $120,000 will be spent for buildings, machinery, etc.

OSHKOSH, WIS.—Bids are being asked by the Board of Industrial Education until Jan. 25 for the complete construction of a vocational school and recreation building costing about $350,000. Plans are by Architects Anler & Jensen, Oshkosh.

RACINE, WIS.—Chicago Pipethread Machine Co. has been incorporated with $25,000 capital to manufacture machinery for cutting threads on pipes by A. H. Goetz, Charles Rasmussen, and T. R. Ingalls.

RACINE, WIS.—Additions costing about $100,000 are being made by the S. C. Johnson & Sons Co., Racine, manufacturing automobile waxes, finishes, varnish, etc. The work calls for additional machinery, motors, conveyors, power plant equipment and other needs. H. F. Johnson is general manager.

RHINELANDER, WIS.—A public garage and repairshop costing about $25,000 will be built here by Edward Abeles. Plans are by architects Smith & Brandt, Manitowoc, Wis.

STURGEON BAY, WIS.—Sturgeon Bay Shipbuilding & Dry Dock Co. has been incorporated with $100,000 capital to take over the shipyards here by Fred R. Schreiner, W. S. Caswell and Rowland W. Stebbins.

WAUKESHA, WIS.—Highway Machinery Co. has been incorporated with $20,000 capital to manufacture equipment, machinery and tools for highway building and maintenance by A. B. Hicken, O. A. Sweet and M. K. Hicken.

WAUKESHA, WIS.—Arthur C. Nickell, Jr., is taking bids for the remodeling and enlargement of a public garage and repair shop, 30x125 feet, 2-story, at a cost of $10,000. New equipment will be installed.

CASPER, WYO.—Midwest Refining Co. has awarded contract to E. M. Smith Steel Products Co. of Los Angeles, Cal. for 300 steel derricks for oil field use.

New Trade Publications

SAWS—A catalog issued by Huther Bros. Saw Mfg. Co., Rochester, N. Y., presents its line of circular saws, various circular cutting tools for wood and metal working and accessories for keeping saws in condition. Complete description and data are given.

AUTOMATIC SWITCHES—General Electric Co., Schenectady, N. Y., has issued a bulletin on its automatic switching equipment, well illustrated to indicate the application of this equipment to railroad service, hydroelectric generators, mining, industrial and central station service.

PUNCH PRESSES—Niagara Machine & Tool Works, Buffalo, N. Y., has issued a bulletin calling attention to its standard lines of punch presses and machinery for sheet metal shops. A number of machines are illustrated. The advantages of standardized equipment is suggested.

REFRIGERATION MACHINERY—American Engineering Co., Philadelphia, has issued a bulletin featuring its line of ammonia compressors, from 2 to 25 tons capacity, for hand or automatic control. Mechanical details are shown in illustrations and actual installations also are presented.

SAND TESTERS—A machine for testing the cohesiveness of sand is described in a folder issued by the Reynolds Electric Co., Chicago. A test bar of the sand is rammed on waxed paper and placed on the machine, which winds up the paper. The overhanging edge of the bar breaks off and the amount determines the cohesiveness.

STOKERS—An underfeed stoker for use under smaller boiler installations than usually have been able to utilize this principle is described in a booklet issued by the Riley Stoker Corp., Worcester, Mass. Details of this type of stoker are shown in halftones of installations and of parts, with diagrams of its operation.

ELECTRIC HEAT—A bulletin by the General Electric Co., Schenectady, N. Y., is titled "Electric Heat in Industry," and deals with advantages of electric heat for various industrial applications in the metal industries, heat treating, ceramics, chemicals, and finishing processes. Photographic illustration adds to its attractiveness.

CENTRIFUGAL AIR COMPRESSORS—Single stage air compressors obtaining their results by centrifugal action are described in a bulletin by the General Electric Co., Schenectady, N. Y. The company now produces 75 sizes in redesigned models, more ruggedly built and with parts more accessible. Full details of construction and many engineering data are furnished.

GASOLINE CRAWLERS—A book describing its all-purpose cranes has been issued by Link-Belt Co., Chicago. Illustrations show the use of drag-line, dipper and trench shovel, skimmer scoop, hook blocks and pile driver. Data are given on lifting capacities, operating speeds, line pull and tractive effort. Information is also given on usual and some unusual and ingenious uses for this type of crane.

CONCRETE MIXTURE—Use of silica in the form of its principal product as an addition to concrete is described in a bulletin by the Celite Products Co., New York. While the value of this addition to improve workability of concrete has been known to engineers for a long time an improved form of silica for this use is now available and its advantages are described in this publication.

SHEET STEEL—Canton Art Metal Co., Canton, O., has issued a handsome catalog of its stamped metal ceiling, with repressed bead and die-punched nail hole construction. It is a manual of the trade and shows how a complete ceiling is built up from its component parts, with complete combination designs. Many new designs for residence and apartment use have been brought out.

ABRASIVES—History and development of artificial abrasives is given in a booklet issued by the Norton Co., Worcester, Mass. From the grindstone and the whetstone, formed by nature in the earth, to the faster cutting artificial abrading agents of the present, is the outline of the story presented. The history of the artificial abrasive is covered by little more than a quarter of a century and in that time it has made great progress. Incidentally the Norton Co. outlines the uses of its own brands of abrasives.

STEEL SHEETS—A lively idea of the breadth of use of steel sheets in industry is presented in a handsomely conceived and executed booklet issued by the Newton Steel Co., Youngstown, O. The volume is dedicated to "our workmen, who have given freely of their abilities and their labors" toward the perfection of the company's products. Pictures of workmen groups are presented to indicate their contented condition. Plant scenes, products into which sheets are fabricated, lists of their uses in various departments of manufacture and useful data are also presented. Pages are embellished by color sketches of various operations in the production of sheets.

SAFETY SWITCHES—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a catalog of its industrial switches, motor starting switches and meter service switches. It includes a number of additions to the Westinghouse line since the preceding catalog. Among the latter is a new type safety enclosed switch for general industrial purposes. It is externally operated and has a quick break mechanism, built in capacities of 30 to 200 amperes and 250 to 500-volt service. Another addition is the extension of full service and other types of switches to 400, 600 and 1200 amperes. Announcement is made of a new quick make, quick break compensator switch, equipped with an extra set of lugs below the hinge jaw for the starting lead, avoiding passing the heavy starting current of squirrel-cage motors through the fuses. Comparative switch information and wiring data are given in the closing pages.

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	669,500	281,700	92,700	58,000
Monthly average 1921..	217,600	280,300	71,800	79,600
Monthly average 1922..	403,300	428,900	131,500	137,500
Monthly average 1923..	619,900	437,100	179,100	.....
Monthly average 1924..	607,700	627,900	233,100	.....
1925				
January	574,500	658,900	245,600	197,430
February	541,900	627,000	241,800	176,514
March	607,900	688,871	281,560	198,737
April	569,800	686,130	267,850	.....
May	574,700	695,200	270,500	186,800
June	510,300	692,400	209,400	187,100
July	492,700	712,800	165,800	199,400
August	444,500	701,400	163,400	198,700
September	448,700	705,400	167,600	192,700
October	473,700	727,800	171,500	201,800
November	494,100	.....	.....	196,400

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
Average monthly 1921..	137,100	38,500	43,300	.....
Average monthly 1922..	73,500	64,300	42,000	152,300
Average monthly 1923..	110,233	58,700	45,500	144,300
Average monthly 1924..	203,500	570,800	48,400	104,600
1925				
January	234,800	26,500	.....	241,800
February	234,900	16,700	75,100	47,000
March	244,900	15,500	61,200	65,200
April	282,857	16,600	38,900	72,700
May	205,424	11,100	40,300	95,500
June	201,700	11,100	41,600	117,900
July	306,600	19,700	33,000	96,900
August	232,800	14,000	29,600	91,000
September	194,000	17,000	41,900	110,300
October	218,300	13,900	.....	.....
November	212,200	.....	.....	.....

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	755,600	250,200	101,300	49,000
Monthly average 1921..	302,100	254,500	65,000	62,300
Monthly average 1922..	486,000	372,000	128,200	114,000
Monthly average 1923..	707,400	408,600	194,483	98,250
Monthly average 1924..	677,600	566,600	237,200	.....
1925				
January	605,100	598,600	236,200	170,856
February	652,300	560,100	235,900	157,227
March	684,700	607,076	268,550	178,367
April	597,600	586,977	250,990	.....
May	651,600	587,000	248,800	164,500
June	585,400	590,500	193,600	168,400
July	590,400	615,600	152,700	179,100
August	477,100	607,100	147,900	170,800
September	640,100	621,800	162,000	177,400
October	652,400	657,900	168,600	182,100
November	653,800	.....	.....	170,900

Exports

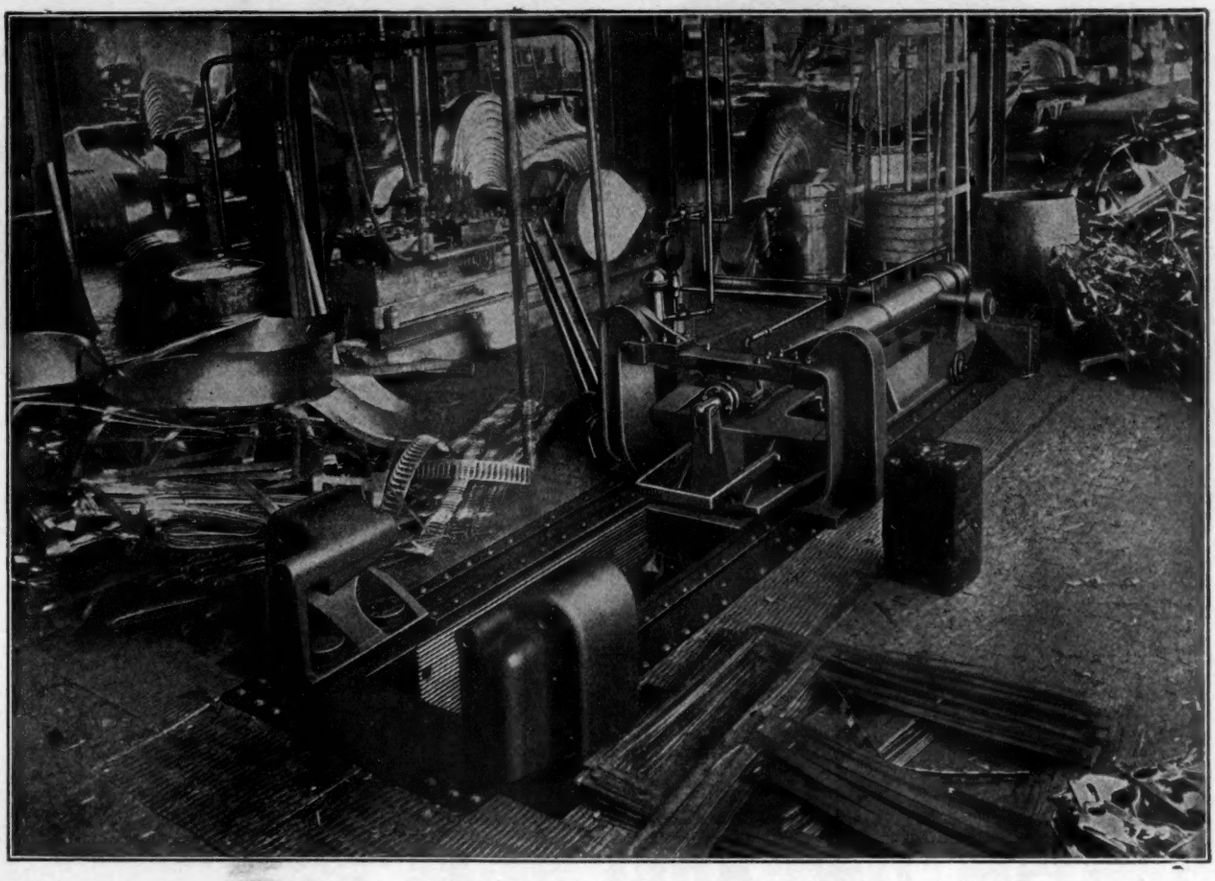
	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	517,300
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	270,900	74,600	74,300	143,600
Average monthly 1921..	141,700	132,700	75,900	176,000
Average monthly 1922..	283,400	164,000	143,000	209,700
Average monthly 1923..	359,975	173,700	208,466	108,900
Average monthly 1924..	320,200	231,100	285,000	127,600
1925				
January	325,400	270,300	.....	270,600
February	298,800	261,100	527,900	218,600
March	312,200	281,200	285,100	297,000
April	301,027	284,300	267,600	218,000
May	322,140	286,200	283,200	247,300
June	275,700	318,800	275,800	215,100
July	306,600	329,500	256,000	251,400
August	287,800	338,200	195,900	272,900
September	273,200	376,000	277,500	.....
October	368,800	296,600	.....	.....
November	322,200	.....	.....	.....

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1925		
January	77,065	141,714
February	92,380	102,302
March	92,110	155,386
April	71,249	155,426
May	68,117	150,612
June	83,330	136,847
July	64,642	138,670
August	68,489	188,963
September	68,445	136,754
October	80,163	141,817
November	79,771	171,134
1924		
December	69,281	129,376
November	34,300	124,464
October	40,877	158,553
September	45,216	135,894
August	44,928	136,025
July	30,410	138,845
June	60,474	172,982
May	66,805	168,172
April	50,975	132,739
March	39,279	124,762
February	42,054	168,191
January	26,677	251,284
Total	556,733	1,805,064

1923		
December	27,012	179,215
November	26,534	186,770
October	29,884	154,079
September	36,612	173,664
August	45,432	163,010
July	53,448	170,259
June	68,019	172,747
May	75,891	204,988
April	77,909	179,159
March	106,206	165,624
February	67,707	135,182
January	120,080	124,444
Total	734,734	2,009,141
1922		
December	96,358	154,087
November	152,250	124,004
October	184,202	131,542
September	76,393	128,370
August	49,054	144,264
July	62,426	157,027
June	39,154	216,298
May	23,098	229,616
April	18,720	197,562
March	12,774	206,474
February	11,535	133,333
January	13,404	155,962
Total	643,010	1,988,539
Yearly Totals		
1921	117,105	2,156,818
1920	448,833	4,920,913
1919	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

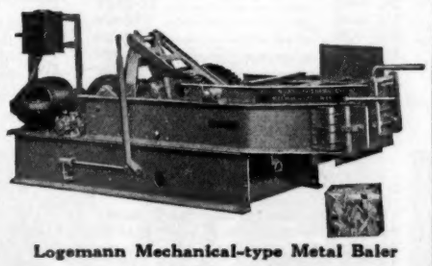
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount of $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	12½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	33	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

TREADS AND COUPLINGS

Butt weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon	application
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{1}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{1}{16}$ inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Chekered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

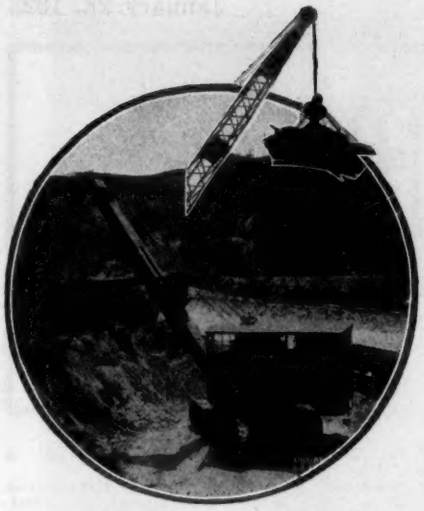
With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

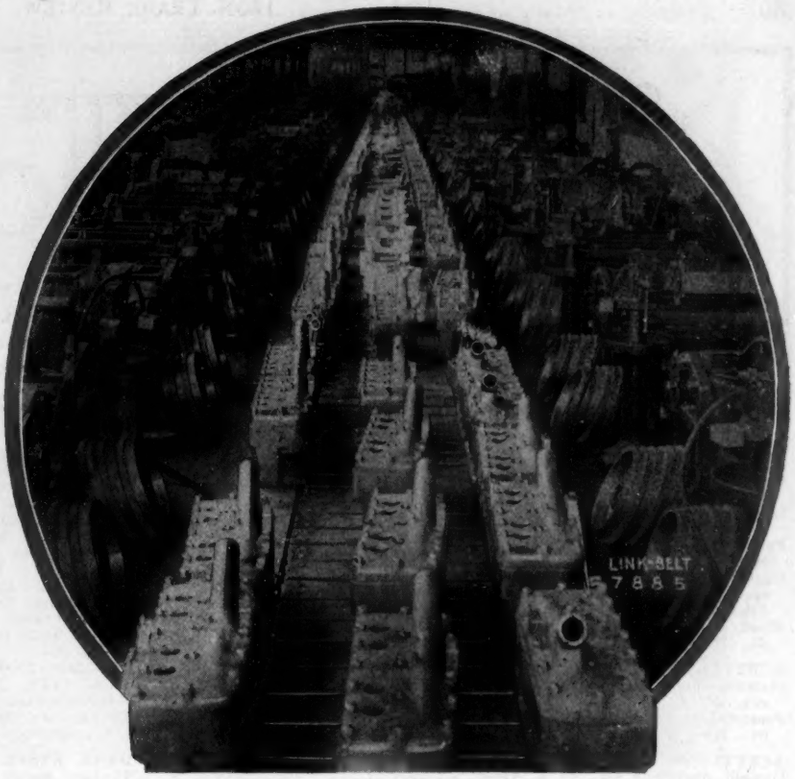
Irregular Sketches

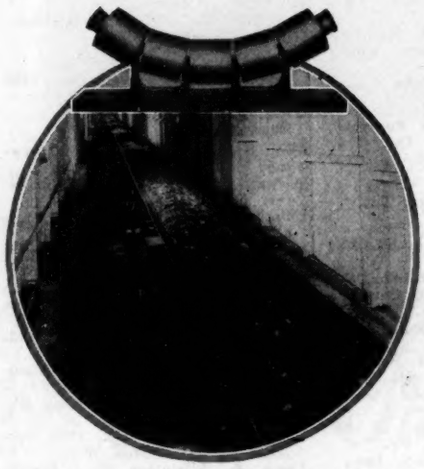
With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

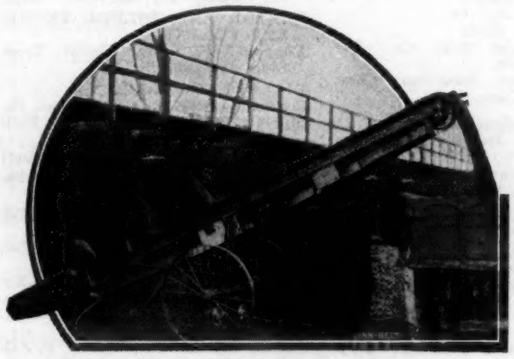


Unusually rugged, fast, and economical to operate, Link-Belt "Built for Service" Gasoline Crawler Cranes provide quick, cheap handling. Various attachments furnished. Write for Book 795.





Link-Belt furnishes complete belt conveyor installations for handling raw or finished, light or heavy materials—at any desired speed.



Now sold for only $475.00 f.o.b. Chicago or Philadelphia—the famous Link-Belt "Cub" Portable Loader is the greatest loader value ever offered. Write for details—no obligation.

Cut Production Costs—Use Link-Belt Methods

YOUR BEST BET FOR MORE EFFICIENT, lower cost production, is reliable and economical Link-Belt material-handling and power transmission equipment, designed to fit your individual needs.

Such equipment pays for itself many times in actual dollars and cents savings—as hundreds of successful LINK-BELT installations testify.

For maximum efficiency in handling materials, Link-Belt designs and builds complete in its own plants, conveyors, elevators, crawler and locomotive type cranes, portable loaders and unloaders, hoists, chains, wheels and buckets—equipment most suitable to every condition. For power transmission without loss or slippage, Link-Belt Silent Chain Drives, 98.2% efficient (on actual test) are used throughout industry.

Send for descriptive Link-Belt Catalogs. Address

LINK-BELT COMPANY 2-23

Leading manufacturers of Elevating, Conveying and Power Transmission Machinery

CHICAGO, 300 W. Pershing Road PHILADELPHIA, 2045 Hunting Park Ave.

INDIANAPOLIS, 200 S. Belmont Ave. Offices in Principal Cities

LINK-BELT

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A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

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Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., Co., 400 Chestnut St., Philadelphia, Pa.

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International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
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ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
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Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
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Titanium Alloy Mfg. Co., Niagara Falls, New York.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM TUBING
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Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

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Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pollak Steel Co., Cincinnati, O.

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BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
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Morris, Wheeler & Co., 30 th and Locust Sts., Philadelphia, Pa.
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Pollak Steel Co., The, Cincinnati, Ohio.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
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Youngstown Sheet & Tube Co., Youngstown, O.

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BASKETS (Wire)
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Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
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Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

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Norma-Hoffman Bearings Corp., Stamford, Conn.

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BEARINGS (Mill Alloyed)
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Norma-Hoffmann Bearings Corp., Stamford, Conn.

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Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

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Hoover Steel Ball Co., Ann Arbor, Mich.
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Timken Roller Bearing Co., The, Canton, O.

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